

In accordance with the memorandum of January 20, 2001, from the Assistant to the President and Chief of Staff, entitled "Regulatory Review Plan," published in the Federal Register on January 24, 2001, 66 FR 7701, EPA has withdrawn this document from the Office of the Federal Register to give the Administrator an opportunity to review it.

Note: The following rule is being submitted for publication in the *Federal Register*. While EPA has taken steps to ensure the accuracy of this Internet version of the rule, it is not the official version. Upon publication in the Federal Register, the official version will be available at http://www.access.gpo.gov/su_docs/aces140.html. When using this site, note that "text" files may be incomplete because they do not include graphics. Instead, select "Adobe Portable Document" or ".pdf" files.

6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 51

[FRL -]

Proposed Guidelines for Best Available Retrofit Technology
(BART) Determinations Under the Regional Haze Regulations

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The purpose of this proposal is to request comment on EPA's proposed guidelines for implementation of the best available retrofit technology (BART) requirements under the regional haze rule which was published on July 1, 1999 (64 FR 35714). We propose to add the guidelines as appendix Y to 40 CFR part 51. We propose to add regulatory text requiring that these guidelines be used for addressing BART

determinations under the regional haze rule. In addition, we are proposing one revision to guidelines issued in 1980 for facilities contributing to "reasonably attributable" visibility impairment.

DATES: We are requesting written comments by **[Insert date 60 days from date of publication of this proposed rule]**.

The EPA intends to hold two public hearings on this proposed rule in the cities of Chicago and Washington, DC. We will issue a notice within a month of the date of publication of this proposed rule to provide specific information on the date, location, and time for each of the public hearings.

ADDRESSES: Information related to the BART guidelines is available for inspection at the Air and Radiation Docket and Information Center, docket number A-2000-28. The docket is located at the U.S. Environmental Protection Agency, 401 M Street, SW, Room M-1500, Washington, DC 20460, telephone (202) 260-7548. The docket is available for public inspection and copying between 8:00 a.m. and 5:30 p.m., Monday through Friday, excluding legal holidays. A reasonable fee may be charged for copying.

You should submit comments on today's proposal and the materials referenced herein (in duplicate if possible) to the Air and Radiation Docket and Information Center (6102), Attention: Docket No. A-2000-28, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue, NW, Washington,

DC 20460. You may also submit comments to EPA by electronic mail at the following address:

A-and-R-Docket@epamail.epa.gov. Electronic comments must be submitted as an ASCII file avoiding the use of special characters and any form of encryption. All comments and data in electronic form must be identified by the docket number [A-2000-28]. Electronic comments on this proposed rule also may be filed online at many Federal Depository Libraries.

FOR FURTHER INFORMATION CONTACT: Tim Smith (telephone 919-541-4718), Mail Drop 15, EPA, Air Quality Strategies and Standards Division, Research Triangle Park, North Carolina, 27711. Internet address: smith.tim@epa.gov.

SUPPLEMENTARY INFORMATION: We are providing the public with the opportunity to comment on EPA's Proposed BART Guidelines and the accompanying regulatory text.

TABLE OF CONTENTS

- I. Background on BART Guidelines
 - A. Commitment in the Preamble to the Regional Haze Rule
 - B. Statutory Requirement for BART Guidelines
- II. Proposed Amendments to Part 51
- III. Revision to 1980 BART Guidelines for "Reasonably Attributable" Visibility Impairment
- IV. Administrative Requirements
 - A. Regulatory Planning and Review by the Office of Management and Budget (OMB) (Executive Order 12866)
 - B. Regulatory Flexibility Act
 - C. Paperwork Reduction Act -- Impact on Reporting Requirements
 - D. Unfunded Mandates Reform Act

- E. Environmental Justice -- Executive Order 12898
- F. Protection of Children from Environmental Health Risks and Safety Risks -- Executive Order 13045
- G. Executive Order 13132: Federalism
- H. Executive Order 13084: Consultation and Coordination with Indian Tribal Governments
- I. National Technology Transfer and Advancement Act

I. Background on BART Guidelines

A. Commitment in the Preamble to the Regional Haze Rule

The EPA included in the final regional haze rule a requirement for BART for certain large stationary sources put in place between 1962 and 1977. We discuss these requirements in detail in the preamble to the final rule (see 64 FR 35737-35743). The regulatory requirements for BART are codified in 40 CFR 51.308(e). In the preamble, we committed to issuing further guidelines to clarify the requirements of the BART provision. The purpose of this notice is to provide the public with an opportunity to comment on the draft guidelines and the accompanying regulatory text.

B. Statutory Requirement for BART Guidelines

Section 169A(b) (1) of the Clean Air Act (CAA) requires EPA to provide guidelines to States on the implementation of the visibility program. Moreover, the last sentence of section 169A(b) states:

In the case of a fossil-fuel fired generating powerplant having a capacity in excess of 750 megawatts, the emission limitations required under

this paragraph shall be determined pursuant to guidelines, promulgated by the Administrator under paragraph (1)

We interpret this statutory requirement as clearly requiring EPA to publish BART guidelines and to require that States follow the guidelines in establishing BART emission limitations for power plants with a total capacity exceeding the 750 megawatt cutoff. The statute is less clear regarding whether the guidelines must be used for sources other than 750 megawatt power plants; however, today's proposed rule would require States to use the guidelines for all of the 26 categories. We believe it is reasonable that consistent, rigorous approaches be used for all BART source categories. In addition, we believe it is important to provide for consistent approaches to identifying the sources in the remaining categories which are BART-eligible. We request comment on whether the regional haze rule should: (1) require use of the guidelines only for 750 megawatt utilities, with the guidelines applying as guidance for the remaining categories, or (2) require use of the guidelines for all of the affected source categories.

II. Proposed Amendments to Part 51

We propose:

(1) BART guidelines, to be added as appendix Y to 40 CFR part 51,

(2) regulatory text, to be added as sub-paragraph 51.308(e)(1)(C), requiring the use of the guidelines.

Overview of Proposed Appendix Y. We discuss the following general topics in appendix Y, which are organized into the following sections:

- Introduction. Section I provides an overview of the BART requirement in the regional haze rule and in the CAA, and an overview of the guidelines.
- Identification of BART-eligible sources. Section II is a step-by-step process for identifying BART-eligible sources.
- Identification of sources subject to BART. Sources “subject to BART” are those BART-eligible sources which “emit a pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any Class I area.” We discuss considerations for identifying sources subject to BART in section III of the proposed appendix Y.
- Engineering analysis. For each source subject to BART, the next step is to conduct an engineering analysis of emissions control alternatives. This step requires the identification of available, technically feasible, retrofit technologies, and for each technology identified, analysis of the cost of

compliance, and the energy and non-air quality environmental impacts, taking into account the remaining useful life and existing control technology present at the source. For each source, a "best system of continuous emission reduction" is selected based upon this engineering analysis. Guidelines for the engineering analysis are described in section IV of the proposed appendix Y.

- Cumulative air quality analysis. The rule requires a cumulative analysis of the degree of visibility improvement that would be achieved in each Class I area as a result of the emissions reductions achievable from all sources subject to BART. The establishment of BART emission limits must take into account the cumulative impact overall from the emissions reductions from all of the source-specific "best technologies" identified in the engineering analysis. Considerations for this cumulative air quality analysis are discussed in section V.

- Emission limits. Considering the engineering analysis and the cumulative air quality analysis, States must establish enforceable limits, including a deadline for compliance, for each source subject to BART. Considerations related to these limits and deadlines are discussed in section VI.

- Trading program alternative. General guidance on how to develop an emissions trading program alternative to BART is contained in section VII of the guidance.

(Note that more comprehensive guidance for emission trading programs generally is described in Section VII).

Regulatory Text. The proposed regulatory text would require that States follow the guidelines for all BART determinations required under the regional haze rule. We request public comment on all provisions of the guidelines and on the accompanying regulatory text.

III. Revision to 1980 BART Guidelines for "Reasonably Attributable" Visibility Impairment

As noted above, the primary purpose of today's proposed rule is to provide BART guidelines for the regional haze program. In addition, however, we are making limited revisions to longstanding guidelines for BART under the 1980 visibility regulations for localized visibility impairment that is "reasonably attributable" to one or a few sources.¹ The visibility regulations require that States must use a 1980 guidelines document when conducting BART analyses for

¹ U.S. Environmental Protection Agency, Guidelines for Determining Best Available Retrofit Technology for Coal-fired Power Plants and Other Existing Stationary Facilities, EPA-450/3-80-009b, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., November 1980 (1980 BART Guidelines).

certain power plants for reasonably attributable visibility impairment. The regulatory text for this requirement is found in 40 CFR 51.302(c)(4)(iii), as follows:

(iii) BART must be determined for fossil-fuel fired generating plants having a total generating capacity in excess of 750 megawatts pursuant to "Guidelines for Determining Best Available Retrofit Technology for Coal-fired Power Plants and Other Existing Stationary Facilities" (1980), which is incorporated by reference, exclusive of appendix E, which was published in the Federal Register on February 6, 1980 (45 FR 8210). It is EPA publication No. 450/3-80-009b and is for sale from the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161. It is also available for inspection at the Office of the Federal Register Information Center, 800 North Capitol NW., suite 700, Washington, DC.

While the analytical process set forth in these guidelines is still generally acceptable for conducting BART analyses for "reasonably attributable" visibility impairment, there are statements in the 1980 BART Guidelines that could be read to indicate that the new source performance standards (NSPS) may be considered to represent the maximum achievable control for existing sources. While this may have been the case in 1980 (e.g., the NSPS for sulfur dioxide (SO₂) from boilers had been recently issued in June 1979), the maximum achievable control levels for recent plant retrofits have exceeded NSPS levels. Thus, in order to ensure that there is no confusion regarding how the 1980 guidelines should be interpreted, EPA has included the

following discussion in today's action and proposes limited clarifying changes to the visibility regulations.

In various sections of the 1980 guideline, the discussion indicates that the NSPS in 1980 was considered to generally represent the most stringent option these sources could install as BART (i.e., maximum achievable level of control). See, e.g., 1980 BART Guidelines at pp. 8, 11 and 21. For example, a flowchart in the 1980 guidelines indicates that if States establish a BART emission limitation equivalent to NSPS for the source, then the State would not need to conduct a full-blown analysis of control alternatives. See, 1980 BART Guidelines at p. 8. Similarly, the visibility analysis described in the guideline assumes as a starting point the level of controls currently achieved by the NSPS. See, 1980 Guideline at p. 11. In the 20-year period since these guidelines were developed, there have been advances in SO₂ control technologies that have significantly increased the level of control that is feasible, while costs per ton of SO₂ controlled have declined. This is demonstrated by a number of recent retrofits or binding agreements to retrofit coal-fired power plants in the western United States. These plants include: Hayden (CO), Navajo (AZ), Centralia (WA), and Mohave (NV). These cases have shown that control options exist which can achieve a significantly greater

degree of control than the 70 percent minimum required by the NSPS for power plants emitting SO₂ at less than 0.60 lb/million Btu heat input. These retrofits have achieved, or are expected to achieve, annual SO₂ reductions in the 85 to 90 percent range. Additionally, an EPA report² published in October 2000 shows that the SO₂ removal for flue gas desulfurization systems installed in the 1990s is commonly 90 percent or more for both wet and dry scrubbers, well above the minimum 70 percent control required by the 1979 NSPS.³

Given the advances in control technology that have occurred over the past 20 years, we believe that it should be made clear that the BART analyses for reasonably attributable visibility impairment should not be based on an assumption that the NSPS level of control represents the maximum achievable level of control. While it is possible that a detailed analysis of the BART factors could result in the selection of a NSPS level of control, we believe that States should only reach this conclusion based upon an

² U.S. Environmental Protection Agency, Controlling SO₂ Emissions: A Review of Technologies, EPA-600/R-00-093, Office of Research and Development, National Risk Management Research Laboratory, Research Triangle Park, NC, October 2000, pp 32-34.

³ Note also that part II of the 1980 BART guidelines includes an analysis of 90 percent control for three power plants burning low-sulfur coal.

analysis of the full range of control options, including those more stringent than a NSPS level of control. In sum, all "reasonably attributable" BART analyses should consider control levels more stringent than NSPS, including maximum achievable levels, and evaluate them in light of the statutory factors.

IV. Administrative Requirements

In preparing any proposed rule, EPA must meet the administrative requirements contained in a number of statutes and executive orders. In this section of the preamble, we discuss how today's regulatory proposal for BART guidelines addresses these administrative requirements.

A. Regulatory Planning and Review by the Office of Management and Budget (OMB) (Executive Order 12866)

Under Executive Order 12866 (58 FR 51735, October 4, 1993) the Agency must determine whether the regulatory action is "significant" and, therefore, subject to OMB review and the requirements of the Executive Order. The Order defines "significant regulatory action" as one that is likely to result in a rule that may:

(1) have an annual effect on the economy of \$100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition,

jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

(2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) materially alter the budgetary impacts of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that this rule is a "significant regulatory action" and EPA has submitted it to OMB for review. The drafts of rules submitted to OMB, the documents accompanying such drafts, written comments thereon, written responses by EPA, and identification of the changes made in response to OMB suggestions or recommendations are available for public inspection at EPA's Air and Radiation Docket and Information Center (Docket Number A-2000-28).

Because today's guidelines clarify, and do not change, the existing rule requirements of the regional haze rule, the guidelines do not have any effect on the Regulatory Impact Analysis (RIA) that was previously prepared for the regional haze rule. This RIA is available in the docket for the regional haze rule (A-95-38). As part of the analyses

included in this RIA, we provided an estimate of the potential cost of control to BART sources that is an average of the costs associated with the least stringent illustrative progress goal (1.0 deciview reduction over a 15-year period) and the most stringent illustrative progress goal (10 percent deciview reduction over a 10-year period). The annual cost of control to BART sources associated with the final Regional Haze rulemaking in 2015, the year for which impacts are projected, is \$72 million (1990 dollars).

This estimate of the control costs for BART sources for the year 2015 was calculated after taking into account a regulatory baseline projection for the year 2015. The baseline for these calculations included control measures estimated to be needed for partial attainment of the PM and ozone NAAQS issued in 1997. These baseline estimates were contained in an analysis prepared for the RIA for the PM and ozone NAAQS, and are summarized in the RIA for the regional haze rulemaking. As a result, in this RIA, we calculated relatively small impacts for BART, in part because the baseline for the analysis assumed a substantial degree of emissions control for BART-eligible sources in response to the national ambient air quality standards (NAAQS) for PM_{2.5}. These NAAQS are currently under review by the Supreme Court, and we expect the court to reach a decision before we take final action on today's proposed rule. Following

Supreme Court action on the PM_{2.5} NAAQS case, we will re-examine, and if necessary, revisit and republish for comment, the RIA before any final rule is published.

The EPA provided a benefits analysis of the emissions reductions associated with the four illustrative progress goals in the RIA for the final rulemaking. This benefits analysis is also incremental to partial attainment of the PM and ozone NAAQS issued in 1997. We did not, however, include a benefits analysis for the reductions from controls specific to the potentially affected BART sources. For more information on the benefit analysis for the final Regional Haze rulemaking, please refer to the RIA in the public docket for the regional haze rule (Docket A-95-38).

B. Regulatory Flexibility Act

The EPA has determined that it is not necessary to prepare a regulatory flexibility analysis in connection with this proposed rule. The EPA has also determined that this proposed rule would not have a significant impact on a substantial number of small entities because the rule would not establish requirements applicable to small entities.

The Regulatory Flexibility Act (5 U.S.C. §§ 601 et seq.) (RFA), as amended by the Small Business Regulatory Enforcement Fairness Act (Pub. L. No.104-121) (SBREFA), provides that whenever an agency is required to publish a general notice of proposed rulemaking, it must prepare and

make available an initial regulatory flexibility analysis, unless it certifies that the proposed rule, if promulgated, will not have "a significant economic impact on a substantial number of small entities." 5 U.S.C. § 605(b). Courts have interpreted the RFA to require a regulatory flexibility analysis only when small entities will be subject to the requirements of the rule. See *Motor and Equip. Mfrs. Ass'n v. Nichols*, 142 F.3d 449 (D.C. Cir. 1998); *United Distribution Cos. v. FERC*, 88 F.3d 1105, 1170 (D.C. Cir. 1996); *Mid-Tex Elec. Co-op, Inc. v. FERC*, 773 F.2d 327, 342 (D.C. Cir. 1985) (agency's certification need only consider the rule's impact on entities subject to the rule).

Similar to the discussion in the proposed and final regional haze rules, the proposed BART guidelines would not establish requirements applicable to small entities. The proposed rule would apply to States, not to small entities. The BART requirements in the regional haze rule require BART determinations for a select list of major stationary sources defined by section 169A(g)(7) of the CAA. However, as noted in the proposed and final regional haze rules, the State's determination of BART for regional haze involves some State discretion in considering a number of factors set forth in section 169A(g)(2), including the costs of compliance.

Further, the final regional haze rule allows States to adopt alternative measures in lieu of requiring the installation and operation of BART at these major stationary sources. As a result, the potential consequences of the BART provisions of the regional haze rule (as clarified in today's proposed guidelines) at specific sources are speculative. Any requirements for BART will be established by State rulemakings. The States would accordingly exercise substantial intervening discretion in implementing the BART requirements of the regional haze rule and today's proposed guidelines. In addition, we note that most sources potentially affected by the BART requirements in section 169A of the CAA are large industrial plants. Of these, we would expect few, if any, to be considered small entities. We request comment on issues regarding small entities that States might encounter when implementing the BART provision.

For today's proposed BART guidelines, EPA certifies that the guidelines and accompanying regulatory text would not have a significant impact on a substantial number of small entities.

C. Paperwork Reduction Act -- Impact on Reporting Requirements

The information collection requirements in today's proposal clarify, but do not modify, the information

collection requirements for BART. Reporting requirements related to BART requirements were included in an Information Collection Request document that was prepared by EPA (ICR No. 1813.02) and a copy may be obtained from Sandy Farmer, by mail at OPPE Regulatory Information Division, U.S. EPA (2822) 1200 Pennsylvania Avenue, NW, Washington, DC 20460, by email at farmer.sandy@epa.gov, or by calling (202) 260-2740. A copy may also be downloaded off the Internet at <http://www.epa.gov/icr>. The information requirements are not effective until OMB approves them.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a Federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (P.L. 104-4) (UMRA), establishes requirements for Federal agencies to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Under section 202 of the UMRA, 2 U.S.C. 1532, EPA generally must prepare a written statement, including a cost-benefit analysis, for any proposed or final rule that "includes any Federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100,000,000 or more ... in any one year." A "Federal mandate" is defined under section 421(6), 2 U.S.C. 658(6), to include a "Federal intergovernmental mandate" and a "Federal private sector mandate." A "Federal intergovernmental mandate," in turn, is defined to include a regulation that "would impose an enforceable duty upon State, local, or tribal governments," section 421(5)(A)(i), 2 U.S.C. 658(5)(A)(i), except for, among other things, a duty that is "a condition of Federal

assistance," section 421(5)(A)(i)(I). A "Federal private sector mandate" includes a regulation that "would impose an enforceable duty upon the private sector," with certain exceptions, section 421(7)(A), 2 U.S.C. 658(7)(A).

Before promulgating an EPA rule for which a written statement is needed under section 202 of the UMRA, section 205, 2 U.S.C. 1535, of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule.

By proposing to release BART guidelines and to require their use for large utility boilers, EPA is not directly establishing any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments. Thus, EPA is not obligated to develop under section 203 of the UMRA a small government agency plan.

Further, EPA carried out consultations with the governmental entities affected by this rule in a manner consistent with the intergovernmental consultation provisions of section 204 of the UMRA.

The EPA also believes that because today's proposal provides States with substantial flexibility, the proposed rule meets the UMRA requirement in section 205 to select the

least costly and burdensome alternative in light of the statutory mandate for BART. The proposed rule provides States with the flexibility to establish BART based on certain criteria, one of which is the costs of compliance. The proposed rule also provides States with the flexibility to adopt alternatives, such as an emissions trading program, in lieu of requiring BART. The BART guidelines therefore, inherently provides for adoption of the least costly, most cost-effective, or least-burdensome alternative that achieves the objective of the rule.

The EPA is not reaching a final conclusion as to the applicability of the requirements of UMRA to this rulemaking action. It is questionable whether a requirement to submit a State Implementation Plan (SIP) revision constitutes a Federal mandate. The obligation for a State to revise its SIP that arises out of sections 110(a), 169A and 169B of the CAA is not legally enforceable by a court of law and, at most, is a condition for continued receipt of highway funds. Therefore, it is possible to view an action requiring such a submittal as not creating any enforceable duty within the meaning of section 421(5)(A)(i) of UMRA (2 U.S.C. 658 (5)(A)(i)). Even if it did, the duty could be viewed as falling within the exception for a condition of Federal assistance under section 421(5)(A)(i)(I) of UMRA (2 U.S.C.

658(5) (A) (i) (I)). As noted earlier, however, notwithstanding these issues, the discussion in section 2 and the analysis in chapter 8 of the RIA constitutes the UMRA statement that would be required by UMRA if its statutory provisions applied, and EPA has consulted with governmental entities as would be required by UMRA. Consequently, it is not necessary for EPA to reach a conclusion as to the applicability of the UMRA requirements.

E. Environmental Justice -- Executive Order 12898

Executive Order 12898 requires that each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minorities and low-income populations. The requirements of Executive Order 12898 have been previously addressed to the extent practicable in the RIA cited above, particularly in chapters 2 and 9 of the RIA.

F. Protection of Children From Environmental Health Risks and Safety Risks -- Executive Order 13045

Executive Order 13045: "Protection of Children from Environmental Health Risks and Safety Risks" (62 FR 19885, April 23, 1997) applies to any rule that: (1) is determined to be "economically significant" as defined under Executive

Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency. The EPA interprets Executive Order 13045 as applying only to those regulatory actions that are based on health or safety risks, such that the analysis required under section 5-501 of the Order has the potential to influence the regulation. The BART guidelines are not subject to Executive Order 13045 because they do not establish an environmental standard intended to mitigate health or safety risks.

G. Executive Order 13132: Federalism

Executive Order 13132, entitled *Federalism* (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.” “Policies that have federalism implications” are defined in the Executive Order to include regulations that have “substantial direct effects on the States, on the

relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.” Under Section 6 of Executive Order 13132, EPA may not issue a regulation that has federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or EPA consults with State and local officials early in the process of developing the proposed regulation. The EPA also may not issue a regulation that has federalism implications and that preempts State law unless the Agency consults with State and local officials early in the process of developing the proposed regulation.

The EPA concludes that this rule will not have substantial federalism implications, as specified in section 6 of Executive Order 13132 (64 FR 43255, August 10, 1999), because it will not directly impose significant new requirements on State and local governments, nor substantially alter the relationship or the distribution of power and responsibilities between States and the Federal government.

Although EPA has determined that section 6 of Executive Order 13132 does not apply, EPA nonetheless consulted

with a broad range of State and local officials during the course of developing this proposed rule. These included contacts with the National Governors Association, National League of Cities, National Conference of State Legislatures, U. S. Conference of Mayors, National Association of Counties, Council of State Governments, International City/County Management Association, and National Association of Towns and Townships.

H. Executive Order 13084: Consultation and Coordination with Indian Tribal Governments

On November 6, 2000, the President issued Executive Order 13175 (65 FR 67249) entitled "Consultation and Coordination with Indian Tribal Governments." Executive Order 13175 took effect on January 6, 2001, and revokes Executive Order 13084 (Tribal Consultation) as of that date. The EPA developed this proposed rule, however, during the period when EO 13084 was in effect; thus, EPA addressed tribal considerations under EO 13084. The EPA will analyze and fully comply with the requirements of EO 13175 before promulgating the final rule.

Under E.O. 13084, EPA may not issue a regulation that is not required by statute that significantly or uniquely affects the communities of Indian tribal governments, and that imposes substantial direct compliance costs on those

communities, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by the tribal governments, or EPA consults with those governments. If EPA complies by consulting, Executive Order 13084 requires EPA to provide to OMB, in a separately identified section of the preamble to the rule, a description of the extent of EPA's prior consultation with representatives of affected tribal governments, a summary of the nature of their concerns, and a statement supporting the need to issue the regulation. In addition, Executive Order 13084 requires EPA to develop an effective process permitting elected officials and other representatives of Indian tribal governments "to provide meaningful and timely input in the development of regulatory policies on matters that significantly or uniquely affect their communities."

Today's proposed rule does not significantly or uniquely affect the communities of Indian tribal governments. This proposed action does not involve or impose any requirements that directly affect Indian tribes. Under EPA's tribal authority rule, tribes are not required to implement CAA programs but, instead, have the opportunity to do so. Accordingly, the requirements of section 3(b) of Executive Order 13084 do not apply to this rule.

I. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 ("NTTAA"), Pub. L. No. 104-113, §12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

This action does not involve technical standards. Therefore, EPA did not consider the use of any voluntary consensus standards.

List of Subjects in 40 CFR Part 51

Environmental protection, Administrative practice and procedure, Air pollution control, Carbon monoxide, Nitrogen dioxide, Particulate matter, Sulfur oxides, Volatile organic compounds.

Dated:

Carol M. Browner,
Administrator

For the reasons set forth in the preamble, part 51 of chapter I of title 40 of the Code of Federal Regulations is proposed to be amended as follows:

**PART 51--REQUIREMENTS FOR PREPARATION, ADOPTION, AND
SUBMITTAL OF IMPLEMENTATION PLANS**

1. The authority citation for part 51 continues to read as follows:

Authority: 23 U.S.C. 101; 42 U.S.C. 7410-7671q.

2. Section 51.302 is amended by revising paragraph (c)(4)(iii) to read as follows:

§51.302 Implementation control strategies for reasonably attributable visibility impairment.

* * * * *

(c) * * *

(4) * * *

(iii) BART must be determined for fossil-fuel fired generating plants having a total generating capacity in excess of 750 megawatts pursuant to "Guidelines for Determining Best Available Retrofit Technology for Coal-fired Power Plants and Other Existing Stationary Facilities" (1980), which is incorporated by reference, exclusive of appendix E, which was published in the Federal Register on February 6, 1980 (45 FR 8210), except that options more stringent than NSPS must be considered.

Establishing a BART emission limitation equivalent to the NSPS level of control is not a sufficient basis to avoid the detailed analysis of control options required by the guidelines. It is EPA publication No. 450/3-80-009b and is for sale from the U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22161.

* * * * *

3. Section 51.308 is amended by adding paragraph(e) (1) (ii) (C) as follows:

§51.308 Regional haze program requirements.

* * * * *

(e) * * *

(1) * * *

(ii) * * *

(C) Appendix Y of this part provides guidelines for conducting the analyses under paragraphs (e) (1) (ii) (A) and (e) (1) (ii) (B) of this section. All BART determinations that are required in paragraph 51.308(e) (1) of this section must be made pursuant to the guidelines in appendix Y of this part.

* * * * *

4. Appendix Y is added as follows:

Appendix Y to part 51. Guidelines for BART Determinations
Under the Regional Haze Rule

Table of Contents:

I. Introduction and Overview

What is the purpose of the guidelines?

What does the CAA require generally for improving
visibility?

What is the BART requirement in the CAA?

What types of visibility problems does EPA address in
its regulations?

What are the BART requirements in EPA's regional haze
regulations?

Do States have an alternative to imposing controls on
specific facilities?

What is included in the guidelines?

Who is the target audience for the guidelines?

II. How to Identify BART-eligible Sources

What are the steps in identifying BART-eligible
sources?

Step 1: Identify emission units in BART categories

Step 2: Identify the start-up dates of those emission
units

Step 3: Compare the potential emissions to the 250
ton/yr cutoff

Final step: Identify the emission units and pollutants that constitute the BART-eligible source.

III. How to Identify Sources "Subject to BART"

How can I identify the "geographic area" or "region" that contributes to a given Class I area?

IV. Engineering Analysis of BART Options

What factors must I address in the Engineering Analysis?

How does a BART engineering analysis compare to a BACT review under the PSD program?

Which pollutants must I address in the engineering review?

What are the five basic steps of a case-by-case BART engineering analysis?

Step 1 -- How do I identify all available retrofit emission control techniques?

Step 2 -- How do I determine whether the options identified in Step 1 are technically feasible?

-- In general, what do we mean by technical feasibility?

-- What do we mean by "available" technology?

-- What do we mean by "applicable" technology?

-- What type of demonstration is required if I conclude that an option is not technically feasible?

Step 3 -- How do I develop a ranking of the technically feasible alternatives?

-- What are the appropriate metrics for comparison?

-- How do I evaluate control techniques with a wide range of emission performance levels?

-- How do I rank the control options?

Step 4 -- For a BART engineering analysis, what impacts must I calculate and report? What methods does EPA recommend for the impacts analyses?

-- Impact analysis part 1: how do I estimate the costs of control?

-- How do I take into account a project's "remaining useful life" in calculating control costs?

-- What do we mean by cost effectiveness?

-- How do I calculate average cost effectiveness?

-- How do I calculate baseline emissions?

-- How do I calculate incremental cost effectiveness?

-- What other information should I provide in the cost impacts analysis?

--Impact analysis part 2: How should I analyze and report energy impacts?

-- Impact analysis part 3: How do I analyze "non-air quality environmental impacts?"

-- What are examples of non-air quality environmental impacts?

Step 5 -- How do I select the "best" alternative, using the results of steps 1 through 4?

Summary of the impacts analysis

Selecting a "best" alternative

In selecting a "best" alternative, should I consider the affordability of controls?

V. Cumulative Air Quality Analysis

What air quality analysis do we require in the regional haze rule for purposes of BART determinations?

How do I consider the results of this analysis in my selection of BART for individual sources?

VI. Enforceable Limits / Compliance Date

VII. Emission Trading Program Overview

What are the general steps in developing an emission trading program?

What are emission budgets and allowances?

What criteria must be met in developing an emission trading program as an alternative to BART?

-- How do I identify sources subject to BART?

-- How do I calculate the emissions reductions that would be achieved if BART were installed and operated on these sources?

-- For a cap and trade program, how do I demonstrate that my emission budget results in emission levels that are equivalent to or less than the emissions levels that would result if BART were installed and operated?

-- How do I ensure that trading budgets achieve "greater reasonable progress?"

How do I allocate emissions to sources?

What provisions must I include in developing a system for tracking individual source emissions and allowances?

How would a regional haze trading program interface with the requirements for "reasonably attributable" BART under §51.302 of the regional haze rule?

I. INTRODUCTION AND OVERVIEW

What is the Purpose of the Guidelines?

The Clean Air Act (CAA), in sections 169A and 169B, contains requirements for the protection of visibility in 156 scenic areas across the United States. To meet the CAA's requirements, EPA recently published regulations to protect against a particular type of visibility impairment known as "regional haze." The regional haze rule is found in this part (40 CFR part 51), in §§ 51.300 through 51.309. These regulations require, in §51.308(e), that certain types of existing stationary sources of air pollutants install best available retrofit technology (BART). The guidelines are designed to help States and others (1) identify those sources that must comply with the BART requirement, and (2) determine the level of control technology that represents BART for each source.

What Does the CAA Require Generally for Improving Visibility?

Section 169A of the CAA, added to the CAA by the 1977 amendments, requires States to protect and improve visibility in certain scenic areas of national importance. The scenic areas protected by section 169A are called "mandatory Class I Federal Areas." In these guidelines, we refer to these as "Class I areas." There are 156 Class I areas, including 47 national parks (under the jurisdiction

of the Department of Interior - National Park Service), 108 wilderness areas (under the jurisdiction of the Department of Interior- Fish and Wildlife Service or the Department of Agriculture - US Forest Service), and one International Park (under the jurisdiction of the Roosevelt-Campobello International Commission). The Federal Agency with jurisdiction over a particular Class I area is referred to in the CAA as the Federal Land Manager. A complete list of the Class I areas is contained in 40 CFR part 81, §§ 81.401 through 81.437, and you can find a map of the Class I areas at the following internet site:

http://www.epa.gov/ttn/oarpg/t1/fr_notices/classimp.gif

The CAA establishes a national goal of eliminating man-made visibility impairment from the Class I areas where visibility is an important value. As part of the plan for achieving this goal, the visibility protection provisions in the CAA mandate that EPA issue regulations requiring that States adopt measures in their State Implementation Plans (SIPs), including long-term strategies, to provide for reasonable progress towards this national goal. The CAA also requires States to coordinate with the Federal Land Managers as they develop their strategies for addressing visibility.

What is the BART requirement in the CAA?

Under section 169A(b) (2) (A) of the CAA, States must require certain existing stationary sources to install BART. The BART requirement applies to "major stationary sources" from one of 26 identified source categories which have the potential to emit 250 tons per year or more of any air pollutant. The CAA requires only sources which were put in place during a specific 15-year time interval to install BART. The BART requirement applies to sources that existed as of the date of the 1977 CAA amendments (that is, August 7, 1977) but which had not been in operation for more than 15 years (that is, not in operation as of August 7, 1962).

The CAA requires BART when any source meeting the above description "emits any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility" in any Class I area. In identifying a level of control as BART, States are required by section 169A(g) of the CAA to consider:

- the costs of compliance,
- the energy and non-air quality environmental impacts of compliance,
- any existing pollution control technology in use at the source,
- the remaining useful life of the source, and
- the degree of visibility improvement which may reasonably be anticipated from the use of BART.

The CAA further requires States to make BART emission limitations part of their SIPs. As with any SIP revision, this will be a public process that provides an opportunity for public comment and judicial review of any decision by EPA to approve or disapprove the revision.

What types of visibility problems does EPA address in its regulations?

_____The EPA addressed the problem of visibility in two phases. In 1980, EPA published regulations addressing what we termed "reasonably attributable" visibility impairment. Reasonably attributable visibility impairment is the result of emissions from one or a few sources that are generally located in close proximity to a specific Class I area. The regulations addressing reasonably attributable visibility impairment are published in §§ 51.300 through 51.307.

_____On July 1, 1999, EPA amended these regulations to address the second, more common, type of visibility impairment known as "regional haze." Regional haze is the result of the collective contribution of many sources over a broad region. The regional haze rule regulations slightly modified 40 CFR 51.300 through 51.307, including the addition of a few definitions in § 51.301, and added new §§ 51.308 and 51.309.

What are the BART requirements in EPA's regional haze regulations?

_____In the July 1, 1999 rulemaking, EPA added a BART requirement for regional haze. You will find the BART requirements in 40 CFR 51.308(e)(1). Definitions of terms used in 40 CFR 51.308(e)(1) are found in § 51.301.

As we discuss in detail in these guidelines, the regional haze rule codifies and clarifies the BART provisions in the CAA. The rule requires that States identify and list "BART-eligible sources," that is, that States identify and list those sources that fall within one of 26 source categories, that were put in place during the 15-year window of time from 1962 to 1977, and that have potential emissions greater than 250 tons per year. Once the State has identified the BART-eligible sources, the next step is to identify those BART eligible sources that may "emit any air pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility." Under the rule, a source which fits this description is "subject to BART." For each source subject to BART, States must identify the level of control representing BART based upon the following analyses:

- First, paragraph 308(e)(1)(ii)(A) provides that States must identify the best system of continuous

emission control technology for each source subject to BART taking into account the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use at the source, and the remaining useful life of the source.

-- Second, paragraph 308(e)(1)(ii)(B), provides that States must conduct an analysis of the degree of visibility improvement that would be achieved from all sources subject to BART that are within a geographic area that contributes to visibility impairment in any protected Class I area.

Once a State has identified the level of control representing BART (if any), it must establish an emission limit representing BART and must ensure compliance with that requirement no later than 5 years after EPA approves the SIP. States are allowed to establish design, equipment, work practice or other operational standards when limitations on measurement technologies make emission standards infeasible.

Do States have an alternative to imposing controls on specific facilities?

States are given the option under 40 CFR 51.308(e)(2) to adopt an alternative approach to imposing controls on a

case-by-case basis for each source subject to BART.

However, while States may instead adopt alternative measures, such as an emissions trading program, 40 CFR 51.308(e)(2)(i) requires States to provide a demonstration that any such alternative will achieve greater "reasonable progress" than would have resulted from installation of BART from all sources subject to BART. Such a demonstration must include:

- a list of all BART-eligible sources;
- an analysis of the best system of continuous emission control technology available for all sources subject to BART, taking into account the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use at the source, and the remaining useful life of the source. Unlike the analysis for BART under 40 CFR 51.308(e)(1), which requires that these factors be considered on a case-by-case basis, States may consider these factors on a category-wide basis, as appropriate, in evaluating alternatives to BART;
- an analysis of the degree of visibility improvement that would result from the alternative program in each protected Class I area.

States must make sure that a trading program or other such measure includes all BART-eligible sources, unless a source has installed BART, or plans to install BART consistent with 51.308(e)(1).⁴ A trading program also may include additional sources. 40 CFR 51.308(e)(2) also requires that States include in their SIPs details on how they would implement the emission trading program or other alternative measure. States must provide a detailed description of the program including schedules for compliance, the emissions reductions that they will require, the administrative and technical procedures for implementing the program, rules for accounting and monitoring emissions, and procedures for enforcement.

What is Included in the Guidelines?

In the guidelines, we provide procedures States must use in implementing the regional haze BART requirements on a source-by-source basis, as provided in 40 CFR 51.308(e)(1). We address general topics related to development of a trading program or other alternative allowed by 40 CFR

⁴ As noted in the preamble to the regional haze rule, States need not include a BART-eligible source in the trading program if the source already has installed BART-level pollution control technology and the emission limit is a federally enforceable requirement (64 FR 35742). We clarify in these guidelines that States may also elect to allow a source the option of installing BART-level controls within the 5-year period for compliance with the BART requirement [see section VI of these guidelines] rather than participating in a trading program.

51.308(e) (2), but we will address most of the details of guidance for trading programs in separate guidelines.

The BART analysis process, and the contents of this guidance, are as follows:

- Identification of all BART-eligible sources. Section II of this guidance outlines a step-by-step process for identifying BART-eligible sources.
- Identification of sources subject to BART. As noted above, sources "subject to BART" are those BART-eligible sources which "emit a pollutant which may reasonably be anticipated to cause or contribute to any impairment of visibility in any Class I area." We discuss considerations for identifying sources subject to BART in section III of the guidance.
- Engineering analysis. For each source subject to BART, the next step is to conduct an engineering analysis of emissions control alternatives. This step requires the identification of available, technically feasible, retrofit technologies, and for each technology identified, analysis of the cost of compliance, and the energy and non-air quality environmental impacts, taking into account the remaining useful life and existing control technology present at the source. For each source, a "best system of continuous emission reduction" will be selected

based upon this engineering analysis. Guidelines for the engineering analysis are described in section IV of this guidance.

- Cumulative air quality analysis. The rule requires a cumulative analysis of the degree of visibility improvement that would be achieved in each Class I area as a result of the emissions reductions achievable from all sources subject to BART. The establishment of BART emission limits must take into account the cumulative impact overall from the emissions reductions from all of the source-specific "best technologies" identified in the engineering analysis. Considerations for this cumulative air quality analysis are discussed in section V of this guidance.

- Emissions limits. Considering the engineering analysis and the cumulative air quality analysis, States must establish enforceable limits, including a deadline for compliance, for each source subject to BART. Considerations related to these limits and deadlines are discussed in section VI of the guidance.

- Considerations in establishing a trading program alternative. General guidance on how to develop an emissions trading program alternative is contained in section VII of the guidance.

Who is the Target Audience for the Guidelines?

The guidelines are written primarily for the benefit of State, local and tribal agencies to satisfy the requirements for including the BART determinations and emission limitations in their SIPs or tribal implementation plans (TIPs). Throughout the guidelines, which are written in a question and answer format, we ask questions "How do I.....?" and answer with phrases "you should...., you must...." The "you" means a State, local or tribal agency conducting the analysis.⁵ We recognize, however, that agencies may prefer to require source owners to assume part of the analytical burden, and that there will be differences in how the supporting information is collected and documented.

II. HOW TO IDENTIFY BART-ELIGIBLE SOURCES

This section provides guidelines on how you identify BART-eligible sources. A BART-eligible source is an existing stationary source in 26 listed categories which meets criteria for startup dates and potential emissions.

What are the Steps In Identifying BART-eligible sources?

_____ Figure 1 shows the steps for identifying whether the source is a "BART eligible source:"

⁵ In order to account for the possibility that BART-eligible sources could go unrecognized, we recommend that you adopt requirements placing a responsibility on source owners to self-identify if they meet the criteria for BART-eligible sources.

Step 1: Identify the emission units in BART categories,

Step 2: Identify the start-up dates of those emission units, and

Step 3: Compare the potential emissions to the 250 ton/yr cutoff.

Figure 1. How to determine whether a source is BART-eligible:

Step 1: Identify emission units in the BART categories

Does the plant contain emissions
units in one or more of the 26
source categories? → No → Stop
 → Yes → Proceed to Step 2

Step 2: Identify the start-up dates of these emission units

Do any of these emissions units meet
the following two tests?

 In existence on
 August 7, 1977
 AND
 Began operation after
 August 7, 1962

 → No → Stop
 → Yes → Proceed to Step 3

*Step 3: Compare the potential emissions from these emission
units to the 250 ton/yr cutoff*

Identify the "stationary source" that
includes the emission units you identified
in Step 2.

Add the current potential emissions from all the
emission units identified in Steps 1 and 2 that are
included within the "stationary source" boundary.

Are the potential emissions from these units
250 tons per year or more for any
visibility-impairing pollutant?

 → No → Stop
 → Yes → These emissions units comprise the
 "BART-eligible source."

Step 1. Identify emission units in the BART Categories

The BART requirement only applies to sources in specific categories listed in the CAA. The BART requirement does not apply to sources in other source categories, regardless of their emissions. The listed categories are:

- (1) Fossil-fuel fired steam electric plants of more than 250 million British thermal units (BTU) per hour heat input,
- (2) Coal cleaning plants (thermal dryers),
- (3) Kraft pulp mills,
- (4) Portland cement plants,
- (5) Primary zinc smelters,
- (6) Iron and steel mill plants,
- (7) Primary aluminum ore reduction plants,
- (8) Primary copper smelters,
- (9) Municipal incinerators capable of charging more than 250 tons of refuse per day,
- (10) Hydrofluoric, sulfuric, and nitric acid plants,
- (11) Petroleum refineries,
- (12) Lime plants,
- (13) Phosphate rock processing plants,
- (14) Coke oven batteries,
- (15) Sulfur recovery plants,
- (16) Carbon black plants (furnace process),

- (17) Primary lead smelters,
- (18) Fuel conversion plants,
- (19) Sintering plants,
- (20) Secondary metal production facilities,
- (21) Chemical process plants,
- (22) Fossil-fuel boilers of more than 250 million BTUs per hour heat input,
- (23) Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels,
- (24) Taconite ore processing facilities,
- (25) Glass fiber processing plants, and
- (26) Charcoal production facilities.

Some plant locations may have emission units from more than one category, and some emitting equipment may fit into more than one category. Examples of this situation are sulfur recovery plants at petroleum refineries, coke oven batteries and sintering plants at steel mills, and chemical process plants at refineries. For Step 1, you identify all of the emissions units at the plant that fit into one or more of the listed categories. You do not identify emission units in other categories.

Example: A mine is collocated with a electric steam generating unit and a coal cleaning plant. You would identify emission units associated with the electric steam generating unit and

the coal cleaning plant, because they are listed categories but not the mine, because coal mining is not a listed category.____

The category titles are generally clear in describing the types of equipment to be listed. Most of the category titles are very broad descriptions that encompass all emission units associated with a plant site (for example, "petroleum refining" and "kraft pulp mills"). In addition, this same list of categories appears in the PSD regulations, for example in 40 CFR 52.21. States and source owners need not revisit any interpretations of the list made previously for purposes of the PSD program. We provide the following clarifications for a few of the category titles and we request comment on whether there are any additional source category titles for which EPA should provide clarification in the final guidelines:

- "Steam electric plants of more than 250 million BTU/hr heat input." Because the category refers to "plants," boiler capacities must be aggregated to determine whether the 250 million BTU/hr threshold is reached.

Example: Stationary source includes a steam electric plant with three 100 million BTU/hr boilers. Because the aggregate capacity exceeds 250 million BTU/hr for

the "plant," these boilers would be identified in Step 2.

"Steam electric plants" includes combined cycle turbines because of their incorporation of heat recovery steam generators. Simple cycle turbines should not be considered "steam electric plants" because they typically do not make steam.

- "Fossil-fuel boilers of more than 250 million BTU/hr heat input." The EPA proposes two options for interpreting this source category title. The first option is the approach used in the regulations for prevention of significant deterioration (PSD). In the PSD regulations, this same statutory language has been interpreted in regulatory language to mean "fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input." The EPA proposes that this same interpretation be used for BART as well. Thus, as in the example above, you would aggregate boiler capacities to determine whether the 250 million BTU/hr threshold is reached.

Under the second option, this category would be interpreted to cover only those boilers that are individually greater than 250 million BTU/hr. This approach would result in differing language from the PSD program. It is possible, however, that different

approaches may be justified. The PSD program ensures that new source projects do not circumvent the program by constructing several boilers with capacities lower than 250 million BTU/hr. Because the BART program affects only sources already in existence as of the date of the 1977 CAA amendments, there may be a lesser need to aggregate boilers that are individually less than 250 million BTU/hr. The EPA requests comment on both options proposed above.

- Petroleum storage and transfer facilities with a capacity exceeding 300,000 barrels. The 300,000 barrel cutoff refers to total facility-wide tank capacity for tanks that were put in place within the 1962-1977 time period, and includes gasoline and other petroleum-derived liquids.

- "Phosphate rock processing plants." This category descriptor is broad, and includes all types of phosphate rock processing facilities, including elemental phosphorous plants as well as fertilizer production plants.

- "Charcoal production facilities." In a letter sent to EPA on October 11, 2000, the National Association of Manufacturers (NAM) noted that there is some limited legislative history on this source category list. Specifically, there is discussion in the Congressional

Record from July 29, 1976 (Cong. Record S. 12781-12784) which identifies a study in the 1970s by the Research Corporation of New England (the TRC report). The Congressional Record contains a table extracted from the TRC report that identifies 190 source categories considered in developing a list of 28 categories that led to the 26 categories eventually listed in the CAA. In its October 11, 2000 letter, NAM suggests that the Congressional Record and the TRC report are relevant to the interpretation of the source category "charcoal production facilities." While EPA does not believe that the TRC report or table contain any information that would suggest subdividing this category, EPA has included the NAM letter and the cited passage from the Congressional Record in the docket for this proposed rule. The EPA requests comment on whether and how the information cited by NAM is relevant to the interpretation of this or other categories.

Step 2: Identify the start-up dates of the emission units

Emissions units listed under Step 1 are BART-eligible only if they were "in existence" on August 7, 1977 but were not "in operation" before August 7, 1962.

What does "in existence on August 7, 1977" mean?

The regulation defines "in existence" to mean that:

the owner or operator has obtained all necessary preconstruction approvals or permits required by Federal, State, or local air pollution emissions and air quality laws or regulations and either has (1) begun, or caused to begin, a continuous program of physical on-site construction of the facility or (2) entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss to the owner or operator, to undertake a program of construction of the facility to be completed in a reasonable time. See 40 CFR 51.301.

Thus, the term "in existence" means the same thing as the term "commence construction" as that term is used in the PSD regulations. See 40 CFR 51.165(a)(1)(xvi) and 40 CFR 52.21(b)(9). Thus, an emissions unit could be "in existence" according to this test even if it did not begin operating until several years later.

Example: The owner or operator obtained necessary permits in early 1977 and entered into binding construction agreements in June 1977. Actual on-site construction began in late 1978, and construction was completed in mid-1979. The source began operating in September 1979. The emissions unit was "in existence" as of August 7, 1977.

We note that emissions units of this size for which construction commenced AFTER August 7, 1977 (i.e., were not "in existence" on August 7, 1977) were subject to major new source review (NSR) under the PSD program. Thus, the August 7, 1977 "in existence" test is essentially the same thing as

the identification of emissions units that were grandfathered from the NSR review requirements of the 1977 CAA amendments.

Finally, we note that sources are not BART eligible if the only change at the plant was the addition of pollution controls. For example, if the only change at a copper smelter during the 1962 through 1977 time period was the addition of acid plants for the reduction of SO₂ emissions, these emission controls would not by themselves trigger a BART review.

What does "in operation before August 7, 1962" mean?

An emissions unit that meets the August 7, 1977 "in existence" test is not BART-eligible if it was in operation before August 7, 1962. "In operation" is defined as "engaged in activity related to the primary design function of the source." This means that a source must have begun actual operations by August 7, 1962 to satisfy this test.

Example: The owner or operator entered into binding agreements in 1960. Actual on-site construction began in 1961, and construction was complete in mid-1962. The source began operating in September 1962. The emissions unit was not "in operation"

before August 7, 1962 and is therefore subject to BART.

What is a "reconstructed source?"

Under a number of CAA programs, an existing source which is completely or substantially rebuilt is treated as a new source. Such "reconstructed" sources are treated as new sources as of the time of the reconstruction. Consistent with this overall approach to reconstructions, the definition of BART-eligible facility (reflected in detail in the definition of "existing stationary facility") includes consideration of sources that were in operation before August 7, 1962, but were reconstructed during the August 7, 1962 to August 7, 1977 time period.

Under the regulation, a reconstruction has taken place if "the fixed capital cost of the new component exceeds 50 percent of the fixed capital cost of a comparable entirely new source." The rule also states that "Any final decision as to whether reconstruction has occurred must be made in accordance with the provisions of §§ 60.15 (f) (1) through (3) of this title." [40 CFR 51.301]. "§§ 60.15(f) (1) through (3)" refers to the general provisions for New Source Performance Standards (NSPS). Thus, the same policies and procedures for identifying reconstructed "affected facilities" under the NSPS program must also be used to

identify reconstructed "stationary sources" for purposes of the BART requirement.

You should identify reconstructions on an emissions unit basis, rather than on a plantwide basis. That is, you need to identify only the reconstructed emission units meeting the 50 percent cost criterion. You should include reconstructed emission units in the list of emission units you identified in Step 1.

The "in operation" and "in existence" tests apply to reconstructed sources. If an emissions unit was reconstructed and began actual operation before August 7, 1962, it is not BART-eligible. Similarly, any emissions unit for which a reconstruction "commenced" after August 7, 1977, is not BART-eligible.

How are modifications treated under the BART provision?

The NSPS program and the major source NSR program both contain the concept of modifications. In general, the term "modification" refers to any physical change or change in the method of operation of an emissions unit that leads to an increase in emissions.

The BART provision in the regional haze rule contains no explicit treatment of modifications. Accordingly, guidelines are needed on how modified emissions units, previously subject to best available control technology

(BACT), lowest achievable emission rate (LAER) and/or NSPS, are treated under the rule. The EPA believes that the best interpretation for purposes of the visibility provisions is that modified emissions units are still "existing." The BART requirements in the CAA do not appear to provide any exemption for sources which were modified since 1977. Accordingly, if an emissions unit began operation before 1962, it is not BART-eligible if it is modified at a later date, so long as the modification is not also a "reconstruction." Similarly, an emissions unit which began operation within the 1962-1977 time window, but was modified after August 7, 1977, is BART-eligible. We note, however, that if such a modification was a major modification subject to the BACT, LAER, or NSPS levels of control, the review process will take into account that this level of control is already in place and may find that the level of controls are already consistent with BART. The EPA requests comment on this interpretation for "modifications."⁶

⁶ Another possible interpretation would be to consider sources built before 1962 but modified during the 1962-1977 time window as a "new" source at the time of the modification. Under this approach, such sources would be considered to have commenced operation during the 1962-1977 time period, and thus would be BART eligible. Similarly, consistent with this interpretation, a source modified after the 1977 date would be treated as "new" as of the date of the modification and therefore would not be BART-eligible. The EPA believes that this approach may be much more difficult to implement, given that programs to identify "modifications" were not in place for much of the 1962-1977

Step 3: Compare the potential emissions to the 250 ton/yr cutoff

The result of Steps 1 and 2 will be a list of emissions units at a given plant site, including reconstructed emissions units, that are within one or more of the BART categories and that were placed into operation within the 1962-1977 time window. The third step is to determine whether the total emissions represent a current potential to emit that is greater than 250 tons per year of any single visibility impairing pollutant. In most cases, you will add the potential emissions from all emission units on the list resulting from Steps 1 and 2. In a few cases, you may need to determine whether the plant contains more than one "stationary source" as the regional haze rule defines that term, and as we explain further below.

What pollutants should I address?

Visibility-impairing pollutants include the following:

- Sulfur dioxide (SO₂),
- Nitrogen oxides (NO_x),
- Particulate matter. (You may use PM₁₀ as the indicator for particulate matter. We do not recommend use of total suspended

time period.

particulates (TSP). PM_{10} emissions include the components of $PM_{2.5}$ as a subset. There is no need to have separate 250 ton thresholds for PM_{10} and $PM_{2.5}$, because 250 tons of PM_{10} represents at most 250 tons of $PM_{2.5}$, and at most 250 tons of any individual particulate species such as elemental carbon, crustal material, etc).

- Volatile organic compounds (VOC), and
- Ammonia.

What does the term "potential" emissions mean?

The regional haze rule defines potential to emit as follows:

"Potential to emit" means the maximum capacity of a stationary source to emit a pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable. Secondary emissions do not count in determining the potential to emit of a stationary source.

This definition is identical to that in the PSD program [40 CFR 51.166 and 51.18]. This means that a source which actually emits less than 250 tons per year of a visibility-impairing pollutant is BART-eligible if its

emissions would exceed 250 tons per year when operating at its maximum physical and operational design.

Example: A source, while operating at one-fourth of its capacity, emits 75 tons per year of SO₂. If it were operating at 100 percent of its maximum capacity, the source would emit 300 tons per year. Because under the above definition such a source would have "potential" emissions that exceed 250 tons per year, the source (if in a listed category and built during the 1962-1977 time window) would be BART-eligible.

A source's "potential to emit" may take into account federally enforceable emission limits.

Example: The same source has a federally enforceable restriction limiting it to operating no more than ½ of the year. Because you can credit this under the definition of potential to emit, the source would have a potential of 150 tons per year, which is less than the 250 tons/year cutoff.

The definition of potential to emit allows only federally enforceable emission limits to be taken into

account for this purpose, and does not credit emission limitations which are enforceable only by State and local agencies, but not by EPA and citizens in Federal court. As a result of some court cases in other CAA programs, EPA is undertaking a rulemaking to determine whether only federally enforceable limits should be taken into account. This rulemaking will address the Federal enforceability restriction in the regional haze definition as well as other program definitions. We expect that this rulemaking will be complete well before the time period for determining whether BART applies.

How do I identify whether a plant has more than one "stationary source?"

The regional haze rule, in 40 CFR 51.301, defines a stationary source as a "building, structure, facility or installation which emits or may emit any air pollutant."⁷ The rule further defines "building, structure or facility" as:

all of the pollutant-emitting activities which belong to the same industrial grouping, are

⁷ Note: Most of these terms and definitions are the same for regional haze and the 1980 visibility regulations. For the regional haze rule we use the term "BART-eligible source" rather than "existing stationary facility" to clarify that only a limited subset of existing stationary sources are subject to BART.

located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities must be considered as part of the same industrial grouping if they belong to the same Major Group (i.e., which have the same two-digit code) as described in the Standard Industrial Classification Manual, 1972 as amended by the 1977 Supplement (U.S. Government Printing Office stock numbers 4101-0066 and 003-005-00176-0 respectively).

In applying this definition, it is first necessary to draw the plant boundary, that is the boundary for the "contiguous or adjacent properties." Next, within this plant boundary it is necessary to group those emission units that are under "common control." The EPA notes that these plant boundary issues and "common control" issues are very similar to those already addressed in implementation of the title V operating permits program and in NSR.

For emission units within the "contiguous or adjacent" boundary and under common control, you then group emission units that are within the same industrial grouping (that is, associated with the same 2-digit Standard Industrial Classification (SIC) code).⁸ For most plants on the BART source category

⁸ The EPA recognizes that we are in a transition period from the use of the SIC system to a new system called the North American Industry Classification System (NAICS). Our initial thinking is that BART determinations, as a one-time activity, are perhaps best handled under the SIC classifications. We request comment on whether a switch to

list, there will only be one 2-digit SIC that applies to the entire plant. For example, all emission units associated with kraft pulp mills are within SIC code 26, and chemical process plants will generally include emission units that are all within SIC code 28. You should apply this "2-digit SIC test" the same way you are now applying this test in the major source NSR programs.⁹

For purposes of the regional haze rule, you group emissions from all emission units put in place within the 1962-1977 time period that are within the 2-digit SIC code, even if those emission units are in different categories on the BART category list.

Examples: A chemical plant which started

operations within the 1962 to 1977 time
period manufactures hydrochloric acid
(within the category title

"Hydrochloric, sulfuric, and nitric acid

the new system for the regional haze rule is warranted -- we expect that few if any BART eligibility determinations would hinge on this distinction.

⁹Note: The concept of support facility used for the PSD program applies here as well. As discussed in the draft New Source Review Workbook Manual, October 1990, pages A.3-A.5, support facilities, that is facilities that convey, store or otherwise assist in the production of the principal product, must be grouped with primary facilities even when more than one 2-digit SIC is present.

plants") and various organic chemicals (within the category title "chemical process plants"), and has onsite an industrial boiler greater than 250 million BTU/hour. All of the emission units are within SIC 28 and, therefore, all the emission units are considered in determining BART eligibility of the plant. You sum the emissions over all of these emission units to see whether there are more than 250 tons per year of potential emissions.

A steel mill which started operations within the 1962 to 1977 time period includes a sintering plant, a coke oven battery, and various other emission units. All of the emission units are within SIC 33. You sum the emissions over all of these emission units to see whether there are more than 250 tons per year of potential emissions.

Final Step: Identify the emissions units and pollutants that constitute the BART-eligible source

If the emissions from the list of emissions units at a stationary source exceed a potential to emit of 250 tons per year for any visibility-impairing pollutant, then that collection of emissions units is a BART-eligible source. A BART analysis is required for each visibility-impairing pollutant emitted.

Example: A stationary source comprises the following two emissions units, with the following potential emissions:

Emissions unit A	500 tons/yr SO ₂
	150 tons/yr NO _x
	25 tons/yr PM
Emissions unit B	100 tons/yr SO ₂
	75 tons/yr NO _x
	10 tons/yr PM

For this example, potential emissions of SO₂ are 600 tons per year, which exceeds the 250 tons/yr threshold.

Accordingly, the entire "stationary source" that is emissions units A and B are subject to a BART review for SO₂, NO_x, and PM, even though the potential emissions of PM and NO_x each are less than 250 tons/yr.

Example: The total potential emissions, obtained by adding the potential emissions of all emission units in listed categories at a plant site, are as follows:

200 tons/yr SO₂

150 tons/yr NO_x

25 tons/yr PM

Even though total emissions exceed 250 tons per year, no individual regulated pollutant exceeds 250 tons per year and this source is not BART-eligible.

III. HOW TO IDENTIFY SOURCES "SUBJECT TO BART"

After you have identified the BART-eligible sources, the next step is determining whether these sources are subject to a further BART analysis because they emit "an air pollutant which may reasonably be anticipated to cause or contribute" to any visibility impairment in a Federal Class I area. As we discuss in the preamble to the regional haze rule at 64 FR 35739-35740, the statutory language represents a very low triggering threshold. In implementing the regional haze rule, you should find that a BART-eligible source is "reasonably anticipated to cause or contribute" to regional haze if the source emits pollutants within a geographic region from which pollutants can be emitted and transported downwind to a Class I area. Where emissions from a given geographic region contribute to regional haze in a Class I area, you should consider any emissions from BART-eligible sources in that region to contribute to the

regional haze problem, thereby warranting a further BART analysis for those sources.

How can I identify "the geographic area" or "region" that contributes to a given Class I area?

As noted in the preamble to the regional haze rule, geographic "regions" that can contribute to regional haze generally extend for hundreds or thousands of kilometers (64 FR 35722). Accordingly, most BART-eligible sources are located within such a geographic region. For example, we believe it would be difficult to demonstrate that a State or territory's emissions do not contribute to regional haze impairment in a Class I area within that State or territory.

The regional haze rule recognizes that there may be geographic areas (individual States or multi-State areas) within the United States, (in virtually all cases involving States that do not have Class I areas) for which the total emissions make only a trivial contribution to visibility impairment in any Class I area. In identifying any such State or area, you or a regional planning organization must conduct an air quality modeling analysis to demonstrate that the total emissions from the State or area makes only a trivial contribution to visibility impairment in Class I areas.

One approach that can be used is to determine whether a State or area contributes in a non-trivial way would be to do an analysis where you compare the visibility impairment in a Class I area with the emissions from a State or area to the visibility impairment in the Class I area in the absence of the emissions from the State or area. This approach can be referred to as a "zero-out" approach where you zero out the emissions from the State or area that is suspected to make a trivial contribution to visibility impairment in a Class I area. Under this approach, you would compare:

- (1) the visibility impairment in each affected Class I area (for the average of the 20 percent most impaired days and the 20 percent least impaired days) when the emissions from the State or area suspected to have a trivial contribution are included in the modeling analysis, and

- (2) the visibility impairment in each affected Class I area (for the average of the 20 percent most impaired days and the 20 percent least impaired days), excluding from the modeling analysis the emissions from the geographic area suspected to have a trivial impact.

The difference in visibility between these two model runs provides an indication of the impact on visibility of emissions from the State(s) in question. In addition, it may be possible in the future to conduct analyses of the

geographic area that contributes to visibility impairment in a Class I area through use of a source apportionment model for PM. Source apportionment models for PM are currently under development by private consultants. Guidance for regional modeling for visibility and PM is found in a document entitled "Guidance for Demonstrating Attainment of Air Quality Goals for PM_{2.5} and Regional Haze." *[Note: this document is currently in draft form, but we expect a final document before final publication of the BART guidelines]*

IV. ENGINEERING ANALYSIS OF BART OPTIONS

This section describes the process for the engineering analysis of control options for sources subject to BART.

What Factors Must I Address in the Engineering Analysis?

The visibility regulations define BART as follows:

Best Available Retrofit Technology (BART) means an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each pollutant which is emitted by... [a BART-eligible source]. The emission limitation must be established, on a case-by-case basis, taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology.

In the regional haze rule, we divide the BART analysis into two parts: an engineering analysis requirement in 40 CFR

51.308(e) (1) (ii) (A), and a visibility impacts analysis requirement in 40 CFR 51.308(e) (1) (ii) (B). This section of the guidelines address the requirements for the engineering analysis. Your engineering analysis identifies the best system of continuous emission reduction taking into account:

- the available retrofit control options,
- any pollution control equipment in use at the source (which affects the availability of options and their impacts),
- the costs of compliance with control options,
- the remaining useful life of the facility (which as we will discuss below, is an integral part of the cost analysis), and
- the energy and non-air quality environmental impacts of control options.

We discuss the requirement for a visibility impacts analysis below in section V.

How does a BART Engineering Analysis Compare to a BACT Review Under the PSD Program?

The steps we recommend as the process for a BART engineering analysis are very similar to the BACT review as described in the New Source Review Workshop Manual (Draft, October 1990). As for BACT reviews consistent with the Workshop Manual, the proposed BART engineering analysis is a

process which provides that all available control technologies be ranked in descending order of control effectiveness. Under our proposed option, you must first examine the most stringent alternative. That alternative is selected as the "best" unless you demonstrate and document that the alternative cannot be justified based upon technical considerations, costs, energy impacts, and non-air quality environmental impacts. If you eliminate the most stringent technology in this fashion, you then consider the next most stringent alternative, and so on.

The EPA also requests comment on an alternative decision-making approach that would not begin with an evaluation of the most stringent control option. For example, you could choose to begin the BART determination process by evaluating the least stringent, technically feasible control option or by evaluating an intermediate control option drawn from the range of technically feasible control alternatives. Under this approach, you would then consider the additional emission reductions, costs, and other effects (if any) of successively more stringent control options. Under such an approach, you would still be required to (1) display and rank all of the options in order of control effectiveness and to identify the average and incremental costs of each option; (2) consider the energy and non-air quality environmental impacts of each option;

and (3) provide a justification for adopting the control technology that you select as the "best" level of control, including an explanation as to why you rejected other more stringent control technologies. While both approaches require essentially the same parameters and analyses, the the EPA generally believes that the approach we propose in the guidelines is more straightforward to implement than the alternative and would tend to give more thorough consideration to stringent control alternatives.

Although very similar in process, BART reviews differ in several respects from the BACT review process described in the NSR Draft Manual. First, because all BART reviews apply to existing sources, the available controls and the impacts of those controls may differ. Second, the CAA requires you to take slightly different factors into account in determining BART and BACT. In a BACT analysis, the permitting authority must consider the "energy, environmental and economic impacts and other costs" associated with a control technology in making its determination. In a BART analysis, on the other hand, the State must take into account the "cost of compliance, the remaining useful life of the source, the energy and nonair quality environmental impacts of compliance, any existing pollution control technology in use at the source, and the degree of improvement in visibility from the use of such

technology" in making its BART determination. Because of the differences in terminology, the BACT review process tends to encompass a broader range of factors. For example, the term "environmental impacts" in the BACT definition is more broad than the term "nonair quality environmental impacts" used in the BART definition. Accordingly, there is no requirement in the BART engineering analysis to evaluate adverse air quality impacts of control alternatives such as the relative impacts on hazardous air pollutants, although you may wish to do so. Finally, for the BART analysis, there is no minimum level of control required, while any BACT emission limitation must be at least as stringent as any NSPS that applies to the source.

Which Pollutants Must I Address in the Engineering Review?

Once you determine that a source is subject to BART, then a BART review is required for each visibility-impairing pollutant emitted. In a BART review, for each affected emission unit, you must establish BART for each pollutant that can impair visibility. Consequently, the BART determination must address air pollution control measures for each emissions unit or pollutant emitting activity subject to review.

Example: Plantwide emissions from emission units within the listed categories that began operation

within the "time window" for BART¹⁰ are 300 tons per year of NO_x, 200 tons per year of SO₂, and 150 tons of primary particulate. Emissions unit A emits 200 tons per year of NO_x, 100 tons per year of SO₂, and 100 tons per year of primary particulate. Other emission units, units B through H, which began operating in 1966, contribute lesser amounts of each pollutant. For this example, a BART review is required for NO_x, SO₂, and primary particulate, and control options must be analyzed for units B through H as well as unit A.

What are the Five Basic Steps of a Case-by-Case BART Engineering Analysis?

The five steps are:

STEP 1 -- Identify all available retrofit control technologies,

STEP 2-- Eliminate Technically Infeasible Options,

STEP 3-- Rank Remaining Control Technologies By Control Effectiveness,

STEP 4-- Evaluate Impacts and Document the Results, and

STEP 5-- Select "Best System of Continuous Emission Reduction."

¹⁰ That is, emission units that were in existence on August 7, 1977 and which began actual operation on or after August 7, 1962.

STEP 1: How do I identify all available retrofit emission control techniques?

Available retrofit control options are those air pollution control technologies with a practical potential for application to the emissions unit and the regulated pollutant under evaluation. Air pollution control technologies can include a wide variety of available methods, systems, and techniques for control of the affected pollutant. Available air pollution control technologies can include technologies employed outside of the United States that have been successfully demonstrated in practice on full scale operations, particularly those that have been demonstrated as retrofits to existing sources. Technologies required as BACT or LAER are available for BART purposes and must be included as control alternatives. The control alternatives should include not only existing controls for the source category in question, but also take into account technology transfer of controls that have been applied to similar source categories and gas streams. Technologies which have not yet been applied to (or permitted for) full scale operations need not be considered as available; we do not expect the source owner to purchase or construct a process or control device that has not already been demonstrated in practice.

Where a NSPS exists for a source category (which is the case for most of the categories affected by BART), you should include a level of control equivalent to the NSPS as one of the control options.¹¹ The NSPS standards are codified in 40 CFR part 60. We note that there are situations where NSPS standards do not require the most stringent level of available control for all sources within a category. For example, post-combustion NO_x controls (the most stringent controls for stationary gas turbines) are not required under subpart GG of the NSPS for Stationary Gas Turbines. However, such controls must still be considered available technologies for the BART selection process.

Potentially applicable retrofit control alternatives can be categorized in three ways.

- Pollution prevention: use of inherently lower-emitting processes/practices, including the

¹¹ In EPA's 1980 BART guidelines for reasonably attributable visibility impairment, we concluded that NSPS standards generally, at that time, represented the best level sources could install as BART, and we required no further demonstration if a NSPS level was selected. In the 20 year period since this guidance was developed, there have been advances in SO₂ control technologies, confirmed by a number of recent retrofits at Western power plants. Accordingly, EPA no longer concludes that the NSPS level of controls automatically represents "the best these sources can install." While it is possible that a detailed analysis of the BART factors could result in the selection of a NSPS level of control, we believe that you should only reach this conclusion based upon an analysis of the full range of control options.

use of materials and production processes and work practices that prevent emissions and result in lower "production-specific" emissions,

- Use of, (and where already in place, improvement in the performance of) add-on controls, such as scrubbers, fabric filters, thermal oxidizers and other devices that control and reduce emissions after they are produced, and
- Combinations of inherently lower-emitting processes and add-on controls. Example: for a gas-fired turbine, a combination of combustion controls (an inherently lower-emitting process) and post-combustion controls such as selective catalytic reduction (add-on) may be available to reduce NO_x emissions.

For the engineering analysis, you should consider potentially applicable control techniques from all three categories. You should consider lower-polluting processes based on demonstrations from facilities manufacturing identical or similar products from identical or similar raw materials or fuels. Add-on controls, on the other hand, should be considered based on the physical and chemical characteristics of the pollutant-bearing emission stream. Thus, candidate add-on controls may have been applied to a broad range of emission unit types that are similar, insofar

as emissions characteristics, to the emissions unit undergoing BART review.

In the course of the BART engineering analysis, one or more of the available control options may be eliminated from consideration because they are demonstrated to be technically infeasible or to have unacceptable energy, cost, or non-air quality environmental impacts on a case-by-case (or site-specific) basis. However, at the outset, you should initially identify all control options with potential application to the emissions unit under review.

We do not consider BART as a requirement to redesign the source when considering available control alternatives. For example, where the source subject to BART is a coal-fired electric generator, we do not require the BART analysis to consider building a natural gas-fired electric turbine although the turbine may be inherently less polluting on a per unit basis.

In some cases, retrofit design changes may be available for making a given production process or emissions unit inherently less polluting.¹² (Example: to allow for use of natural gas rather than oil for startup). In such cases, the ability of design considerations to make the process

¹² Because BART applies to existing sources, we recognize that there will probably be far fewer opportunities to consider inherently lower-emitting processes than for NSR.

inherently less polluting must be considered as a control alternative for the source.

Combinations of inherently lower-polluting processes/practices (or a process made to be inherently less polluting) and add-on controls could possibly yield more effective means of emissions control than either approach alone. Therefore, the option to use an inherently lower-polluting process does not, in and of itself, mean that no additional add-on controls need to be included in the BART analysis. These combinations should be identified in Step 1 for evaluation in subsequent steps.

For emission units subject to a BART engineering review, there will often be control measures or devices already in place. For such emission units, it is important to include control options that involve improvements to existing controls, and not to limit the control options only to those measures that involve a complete replacement of control devices.

Example: For a power plant with an existing wet scrubber, the current control efficiency is 66 percent. Part of the reason for the relatively low control efficiency is that 22 percent of the gas stream bypasses the scrubber. An engineering review identifies options for improving the performance of the wet scrubber by redesigning the internal

components of the scrubber and by eliminating or reducing the percentage of the gas stream that bypasses the scrubber. Four control options are identified: (1) 78 percent control based upon improved scrubber performance while maintaining the 22 percent bypass, (2) 83 percent control based upon improved scrubber performance while reducing the bypass to 15 percent, (3) 93 percent control based upon improving the scrubber performance while eliminating the bypass entirely, (this option results in a "wet stack" operation in which the gas leaving the stack is saturated with water) and (4) 93 percent as in option 3, with the addition of an indirect reheat system to reheat the stack gas above the saturation temperature. You must consider each of these four options in a BART analysis for this source.

You are expected to identify all demonstrated and potentially applicable retrofit control technology alternatives. Examples of general information sources to consider include:

- The EPA's Clean Air Technology Center, which includes the RACT/BACT/LAER Clearinghouse (RBLC);
- State and Local Best Available Control Technology Guidelines - many agencies have online

information- for example South Coast Air Quality Management District, Bay Area Air Quality Management District, and Texas Natural Resources Conservation Commission;

- Control technology vendors;
- Federal/State/Local NSR permits and associated inspection/performance test reports;
- Environmental consultants;
- Technical journals, reports and newsletters, air pollution control seminars; and
- EPA's NSR bulletin board--
<http://www.epa.gov/ttn/nsr>;
- Department of Energy's Clean Coal Program -- technical reports;
- NO_x Control Technology "Cost Tool" - Clean Air Markets Division web page --
<http://www.epa.gov/acidrain/nox/noxtech.htm>;
- Performance of selective catalytic reduction on coal-fired steam generating units - final report. OAR/ARD, June 1997 (also available at <http://www.epa.gov/acidrain/nox/noxtech.htm>);
- Cost estimates for selected applications of NO_x control technologies on stationary combustion boilers. OAR/ARD June 1997. (Docket for NO_x SIP call, A-96-56, II-A-03);

- Investigation of performance and cost of NO_x controls as applied to group 2 boilers. OAR/ARD, August 1996. (Docket for Phase II NO_x rule, A-95-28, IV-A-4);
- Controlling SO₂ Emissions: A Review of Technologies. EPA-600/R-00-093, USEPA/ORD/NRMRL, October 2000.
- OAQPS Control Cost Manual.

You should compile appropriate information from all available information sources, and you should ensure that the resulting list of control alternatives is complete and comprehensive.

STEP 2: How do I determine whether the options identified in Step 1 are technically feasible?

In Step two, you evaluate the technical feasibility of the control options you identified in Step one. You should clearly document a demonstration of technical infeasibility and should show, based on physical, chemical, and engineering principles, that technical difficulties would preclude the successful use of the control option on the emissions unit under review. You may then eliminate such technically infeasible control options from further consideration in the BART analysis.

In general, what do we mean by technical feasibility?

Control technologies are technically feasible if either (1) they have been installed and operated successfully for the type of source under review, or (2) the technology could be applied to the source under review. Two key concepts are important in determining whether a technology could be applied: "availability" and "applicability." As explained in more detail below, a technology is considered "available" if the source owner may obtain it through commercial channels, or it is otherwise available within the common sense meaning of the term. An available technology is "applicable" if it can reasonably be installed and operated on the source type under consideration. A technology that is available and applicable is technically feasible.

What do we mean by "available" technology?

The typical stages for bringing a control technology concept to reality as a commercial product are:

- concept stage;
- research and patenting;
- bench scale or laboratory testing;
- pilot scale testing;
- licensing and commercial demonstration; and

- commercial sales.

A control technique is considered available, within the context presented above, if it has reached the licensing and commercial sales stage of development. Similarly, we do not expect a source owner to conduct extended trials to learn how to apply a technology on a totally new and dissimilar source type. Consequently, you would not consider technologies in the pilot scale testing stages of development as "available" for purposes of BART review.

Commercial availability by itself, however, is not necessarily a sufficient basis for concluding a technology to be applicable and therefore technically feasible. Technical feasibility, as determined in Step 2, also means a control option may reasonably be deployed on or "applicable" to the source type under consideration.

Because a new technology may become available at various points in time during the BART analysis process, we believe that guidelines are needed on when a technology must be considered. For example, a technology may become available during the public comment period on the State's rule development process. Likewise, it is possible that new technologies may become available after the close of the State's public comment period and before submittal of the

SIP to EPA, or during EPA's review process on the SIP submittal. In order to provide certainty in the process, we propose that all technologies be considered if available before the close of the State's public comment period. You need not consider technologies that become available after this date. As part of your analysis, you should consider any technologies brought to your attention in public comments. If you disagree with public comments asserting that the technology is available, you should provide an explanation for the public record as to the basis for your conclusion.

What do we mean by "applicable" technology?

You need to exercise technical judgment in determining whether a control alternative is applicable to the source type under consideration. In general, a commercially available control option will be presumed applicable if it has been or is soon to be deployed (e.g., is specified in a permit) on the same or a similar source type. Absent a showing of this type, you evaluate technical feasibility by examining the physical and chemical characteristics of the pollutant-bearing gas stream, and comparing them to the gas stream characteristics of the source types to which the technology had been applied previously. Deployment

of the control technology on a new or existing source with similar gas stream characteristics is generally a sufficient basis for concluding the technology is technically feasible barring a demonstration to the contrary as described below.

What type of demonstration is required if I conclude that an option is not technically feasible?

Where you assert that a control option identified in Step 1 is technically infeasible, you should make a factual demonstration that the option is commercially unavailable, or that unusual circumstances preclude its application to a particular emission unit. Generally, such a demonstration involves an evaluation of the characteristics of the pollutant-bearing gas stream and the capabilities of the technology. Alternatively, a demonstration of technical infeasibility may involve a showing that there are unresolvable technical difficulties with applying the control to the source (e.g., size of the unit, location of the proposed site, or operating problems related to specific circumstances of the source). Where the resolution of technical difficulties is a matter of cost, you should consider the technology to be technically feasible. The cost of

a control alternative is considered later in the process.

The determination of technical feasibility is sometimes influenced by recent air quality permits. In some cases, an air quality permit may require a certain level of control, but the level of control in a permit is not expected to be achieved in practice (e.g., a source has received a permit but the project was canceled, or every operating source at that permitted level has been physically unable to achieve compliance with the limit). Where this is the case, you should provide supporting documentation showing why such limits are not technically feasible, and, therefore, why the level of control (but not necessarily the technology) may be eliminated from further consideration. However, if there is a permit requiring the application of a certain technology or emission limit to be achieved for such technology (especially as a retrofit for an existing emission unit), this usually is sufficient justification for you to assume the technical feasibility of that technology or emission limit.

Physical modifications needed to resolve technical obstacles do not, in and of themselves, provide a justification for eliminating the control technique on the basis of technical infeasibility. However, you may consider the cost of such

modifications in estimating costs. This, in turn, may form the basis for eliminating a control technology (see later discussion).

Vendor guarantees may provide an indication of commercial availability and the technical feasibility of a control technique and could contribute to a determination of technical feasibility or technical infeasibility, depending on circumstances. However, we do not consider a vendor guarantee alone to be sufficient justification that a control option will work. Conversely, lack of a vendor guarantee by itself does not present sufficient justification that a control option or an emissions limit is technically infeasible. Generally, you should make decisions about technical feasibility based on chemical, and engineering analyses (as discussed above), in conjunction with information about vendor guarantees.

A possible outcome of the BART procedures discussed in these guidelines is the evaluation of multiple control technology alternatives which result in essentially equivalent emissions. It is not EPA's intent to encourage evaluation of unnecessarily large numbers of control alternatives for every emissions unit. Consequently, you should use judgment in deciding on those alternatives for which you will

conduct the detailed impacts analysis (Step 4 below). For example, if two or more control techniques result in control levels that are essentially identical, considering the uncertainties of emissions factors and other parameters pertinent to estimating performance, you may evaluate only the less costly of these options. You should narrow the scope of the BART analysis in this way, only if there is a negligible difference in emissions and energy and non-air quality environmental impacts between control alternatives.

STEP 3: How do I develop a ranking of the technically feasible alternatives?

Step 3 involves ranking all the technically feasible control alternatives identified in Step 2. For the pollutant and emissions unit under review, you rank the control alternatives from the most to the least effective in terms of emission reduction potential.

Two key issues that must be addressed in this process include:

- (1) Making sure that you express the degree of control using a metric that ensures an "apples to apples" comparison of emissions performance levels among options, and

(2) Giving appropriate treatment and consideration of control techniques that can operate over a wide range of emission performance levels.

In some instances, a control technology may reduce more than one visibility impairing pollutant. We request comment on whether and how the BART guidelines should address the process for ranking such control technologies against control technologies which reduce emissions of only one pollutant.

What are the appropriate metrics for comparison?

This issue is especially important when you compare inherently lower-polluting processes to one another or to add-on controls. In such cases, it is generally most effective to express emissions performance as an average steady state emissions level per unit of product produced or processed.

Examples of common metrics:

- pounds of SO₂ emissions per million Btu heat input, and
- pounds of NO_x emissions per ton of cement produced.

How do I evaluate control techniques with a wide range of emission performance levels?

Many control techniques, including both add-on controls and inherently lower polluting processes, can perform at a wide range of levels. Scrubbers and high and low efficiency electrostatic precipitators (ESPs) are two of the many examples of such control techniques that can perform at a wide range of levels. It is not our intent to require analysis of each possible level of efficiency for a control technique, as such an analysis would result in a large number of options. It is important, however, that in analyzing the technology you take into account the most stringent emission control level that the technology is capable of achieving. You should use the most recent regulatory decisions and performance data (e.g., manufacturer's data, engineering estimates and the experience of other sources) to identify an emissions performance level or levels to evaluate.

In assessing the capability of the control alternative, latitude exists to consider any special circumstances pertinent to the specific source under review, or regarding the prior application of the control alternative. However, you must document the basis for choosing the alternate level (or range) of control in the BART analysis. Without a showing of differences between the source and other sources that

have achieved more stringent emissions limits, you should conclude that the level being achieved by those other sources is representative of the achievable level for the source being analyzed.

You may encounter cases where you may wish to evaluate other levels of control in addition to the most stringent level for a given device. While you must consider the most stringent level as one of the control options, you may consider less stringent levels of control as additional options. This would be useful, particularly in cases where the selection of additional options would have widely varying costs and other impacts.

Finally, we note that for retrofitting existing sources in addressing BART, you should consider ways to improve the performance of existing control devices, particularly when a control device is not achieving the level of control that other similar sources are achieving in practice with the same device.

How do I rank the control options?

After determining the emissions performance levels (using appropriate metrics of comparison) for each control technology option identified in Step 2, you establish a list that identifies the most stringent

control technology option. Each other control option is then placed after this alternative in a ranking according to its respective emissions performance level, ranked from lowest emissions to highest emissions (most effective to least stringent effective emissions control alternative). You should do this for each pollutant and for each emissions unit (or grouping of similar units) subject to a BART analysis.

Step 4: For a BART engineering analysis, what impacts must I calculate and report? What methods does EPA recommend for the impacts analysis?

After you identify and rank the available and technically feasible control technology options, you must then conduct three types of impacts analyses when you make a BART determination:

- | | |
|-------------------------|---|
| Impact analysis part 1: | costs of compliance,
(taking into account the
remaining useful life of
the facility) |
| Impact analysis part 2: | energy impacts, and |
| Impact analysis part 3: | non-air quality
environmental impacts. |

In this section, we describe how to conduct each of these three analyses. You are responsible for presenting an evaluation of each impact along with appropriate supporting information. You should discuss and, where possible, quantify both beneficial and adverse impacts. In general, the analysis should focus on the direct impact of the control alternative.

Impact analysis part 1: How do I estimate the costs of control?

To conduct a cost analysis, you:

- identify the emissions units being controlled,
- identify design parameters for emission controls, and
- develop cost estimates based upon those design parameters.

It is important to identify clearly the emission units being controlled, that is, to specify a well-defined area or process segment within the plant. In some cases, multiple emission units can be controlled jointly. However, in other cases it may be appropriate in the cost analysis to consider whether multiple units will be required to install separate and/or different control devices. The engineering analysis should provide a clear summary list of equipment and the

associated control costs. Inadequate documentation of the equipment whose emissions are being controlled is a potential cause for confusion in comparison of costs of the same controls applied to similar sources.

You then specify the control system design parameters. Potential sources of these design parameters include equipment vendors, background information documents used to support NSPS development, control technique guidelines documents, cost manuals developed by EPA, control data in trade publications, and engineering and performance test data. The following are a few examples of design parameters for two example control measures:

Control Device	Examples of Design Parameters
Wet Scrubbers	Type of sorbent used (lime, limestone, etc.) Gas pressure drop Liquid/gas ratio
Selective Catalytic Reduction	Ammonia to NO _x molar ratio Pressure Drop Catalyst life

The value selected for the design parameter should ensure that the control option will achieve the level

of emission control being evaluated. You should include in your analysis, documentation of your assumptions regarding design parameters. Examples of supporting references would include the Office of Air Quality Planning and Standards (OAQPS) Control Cost Manual (see below) and background information documents used for NSPS and hazardous pollutant emission standards. If the design parameters you specified differ from typical designs, you should document the difference by supplying performance test data for the control technology in question applied to the same source or a similar source.

Once the control technology alternatives and achievable emissions performance levels have been identified, you then develop estimates of capital and annual costs. The basis for equipment cost estimates also should be documented, either with data supplied by an equipment vendor (i.e., budget estimates or bids) or by a referenced source (such as the OAQPS Control Cost Manual, Fifth Edition, February 1996, EPA 453/B-96-001)¹³. In order to maintain and improve

¹³ The Control Cost Manual is updated periodically. While this citation refers to the latest version at the time this guidance was written, you should use the version that is current as of when you conduct your impact analysis. This document is available at the following Web site: <http://www.epa.gov/ttn/catc/dir1/chpt2acr.pdf>

consistency, we recommend that you estimate control equipment costs based on the EPA/OAQPS Control Cost Manual, where possible.¹⁴ The Control Cost Manual addresses most control technologies in sufficient detail for a BART analysis. While the types of site-specific analyses contained in the Control Cost Manual are less precise than those based upon a detailed engineering design, normally the estimates provide results that are plus or minus 30 percent, which is generally sufficient for the BART review. The cost analysis should take into account site-specific conditions that are out of the ordinary (e.g., use of a more expensive fuel or additional waste disposal costs) that may affect the cost of a particular BART technology option.

How do I take into account a project's "remaining useful life" in calculating control costs?

You treat the requirement to consider the source's "remaining useful life" of the source for BART

¹⁴ You should include documentation for any additional information you used for the cost calculations, including any information supplied by vendors that affects your assumptions regarding purchased equipment costs, equipment life, replacement of major components, and any other element of the calculation that differs from the Control Cost Manual.

determinations as one element of the overall cost analysis. The "remaining useful life" of a source, if it represents a relatively short time period, may affect the annualized costs of retrofit controls. For example, the methods for calculating annualized costs in EPA's Control Cost Manual require the use of a specified time period for amortization that varies based upon the type of control. If the remaining useful life will clearly exceed this time period, the remaining useful life has essentially no effect on control costs and on the BART determination process. Where the remaining useful life is less than the time period for amortizing costs, you should use this shorter time period in your cost calculations.

For purposes of these guidelines, the remaining useful life is the difference between:

- (1) January 1 of the year you are conducting the BART analysis (but not later than January 1, 2008)¹⁵; and
- (2) the date the facility stops operations. This date must be assured by a federally-enforceable restriction preventing further operation. A

¹⁵ The reason for the year 2008 is that the year 2008 is the latest year for which SIPs are due to address the BART requirement.

projected closure date, without such a federally-enforceable restriction, is not sufficient. (The EPA recognizes that there may be situations where a source operator intends to shut down a source by a given date, but wishes to retain the flexibility to continue operating beyond that date in the event, for example, that market conditions change.) We request comment on how such flexibility could be provided in this regard while maintaining consistency with the statutory requirement to install BART within 5 years. For example, one option that we request comment on is allowing a source to choose between:

- (1) accepting a federally enforceable condition requiring the source to shut down by a given date, or
- (2) installing the level of controls that would have been considered BART if the BART analysis had not assumed a reduced remaining useful life if the source is in operation 5 years after the date EPA approves the relevant SIP. The source would not be allowed to operate after the 5-year mark without such controls.

What do we mean by cost effectiveness?

Cost effectiveness, in general, is a criterion used to assess the potential for achieving an objective at least cost. For purposes of air pollutant analysis, "effectiveness" is measured in terms of tons of pollutant emissions removed, and "cost" is measured in terms of annualized control costs. We recommend two types of cost-effectiveness calculations -- average cost effectiveness, and incremental cost-effectiveness.

In the cost analysis, you should take care to not focus on incomplete results or partial calculations. For example, large capital costs for a control option alone would not preclude selection of a control measure if large emissions reductions are projected. In such a case, low or reasonable cost effectiveness numbers may validate the option as an appropriate BART alternative irrespective of the large capital costs. Similarly, projects with relatively low capital costs may not be cost effective if there are few emissions reduced.

How do I calculate average cost effectiveness?

Average cost effectiveness means the total annualized costs of control divided by annual emissions reductions (the difference between baseline annual emissions and the estimate of emissions after controls), using the following formula:

Average cost effectiveness (dollars per ton removed) =
$$\frac{\text{Control option annualized cost}^{16}}{\text{Baseline annual emissions} - \text{Annual emissions with Control option}}$$

Because you calculate costs in (annualized) dollars per year (\$/yr) and because you calculate emissions rates in tons per year (tons/yr), the result is an average cost-effectiveness number in (annualized) dollars per ton (\$/ton) of pollutant removed.

How do I calculate baseline emissions?

The baseline emissions rate should represent a realistic depiction of anticipated annual emissions for the source. In general, for the existing sources subject to BART, you will estimate the anticipated annual emissions based upon actual emissions from a baseline period. For purposes of estimating actual emissions, these guidelines take a similar approach to the current definition of actual emissions in NSR programs. That is, the baseline emissions are the average annual emissions from the two most recent

¹⁶ Whenever you calculate or report annual costs, you should indicate the year for which the costs are estimated. For example, if you use the year 2000 as the basis for cost comparisons, you would report that an annualized cost of \$20 million would be: \$20 million (year 2000 dollars).

years, unless you demonstrate that another period is more representative of normal source operations.¹⁷

When you project that future operating parameters (e.g., limited hours of operation or capacity utilization, type of fuel, raw materials or product mix or type) will differ from past practice, and if this projection has a deciding effect in the BART determination, then you must make these parameters or assumptions into enforceable limitations. In the absence of enforceable limitations, you calculate baseline emissions based upon continuation of past practice.

Examples: The baseline emissions calculation for an emergency standby generator may consider the fact that the source owner would not operate more than past practice of 2 weeks a year. On the other hand, baseline emissions associated with a base-loaded turbine should be based on its past practice which would indicate a large number of

¹⁷ This is the approach in the current NSR regulations. It is possible that this definition of baseline period may change based upon a current effort to amend the NSR regulations. We propose that these guidelines should be amended to be consistent with the approach taken in that separate rulemaking.

hours of operation. This produces a significantly higher level of baseline emissions than in the case of the emergency/standby unit and results in more cost-effective controls. As a consequence of the dissimilar baseline emissions, BART for the two cases could be very different.

_____ *How do I calculate incremental cost effectiveness?*

In addition to the average cost effectiveness of a control option, you should also calculate incremental cost effectiveness. You should consider the incremental cost effectiveness in combination with the total cost effectiveness in order to justify elimination of a control option. The incremental cost effectiveness calculation compares the costs and emissions performance level of a control option to those of the next most stringent option, as shown in the following formula:

Incremental Cost Effectiveness (dollars per incremental ton removed)

=

(Total annualized costs of control option) - (Total annualized costs of next control option)

÷

(Next control option annual emissions) - (Control option annual emissions)

Example 1: Assume that Option F on Figure 2 has total annualized costs of \$1 million to reduce 2000 tons of a pollutant, and that Option D on Figure 2 has total annualized costs of \$500,000 to reduce 1000 tons of the same pollutant. The incremental cost effectiveness of Option F relative to Option D is (\$1 million - \$500,000) divided by (2000 tons - 1000 tons), or \$500,000 divided by 1000 tons, which is \$500/ton.

Example 2: Assume that two control options exist: Option 1 and Option 2. Option 1 achieves a 100,000 ton/yr reduction at an annual cost of \$19 million. Option 2 achieves a 98,000 tons/yr reduction at an annual cost of \$15 million. The incremental cost effectiveness of Option 1 relative to Option 2 is (\$19 million - \$15 million) divided by (100,000 tons - 98,000 tons). The adoption of Option 1 instead of Option 2 results in an incremental emission reduction of 2,000 tons per year at an additional cost of \$4,000,000 per year. The incremental cost of Option 1, then, is \$2000 per ton - 10 times the average cost of \$190 per ton. While \$2000 per ton may still be deemed reasonable, it is useful to consider both the average and incremental cost in making an overall cost-effectiveness finding. Of course, there may be other differences between these options, such as, energy or water use, or non-air environmental effects, which also deserve consideration in selecting a BART technology.

You should exercise care in deriving incremental

costs of candidate control options. Incremental cost-effectiveness comparisons should focus on annualized cost and emission reduction differences between "dominant" alternatives. To identify dominant alternatives, you generate a graphical plot of total annualized costs for total emissions reductions for all control alternatives identified in the BART analysis, and by identifying a "least-cost envelope" as shown in Figure 2.

Example: Eight technically feasible control options for analysis are listed in the BART ranking. These are represented as A through H in Figure 2. The dominant set of control options, B, D, F, G, and H, represent the least-cost envelope, as we depict by the cost curve connecting them. Points A, C and E are inferior options, and you should not use them in calculating incremental cost effectiveness. Points A, C and E represent inferior controls because B will buy more emissions reductions for less money than A; and similarly, D and F will buy more reductions for less money than C and E, respectively.

In calculating incremental costs, you:

(1) Rank the control options in ascending order of annualized total costs,

(2) Develop a graph of the most reasonable smooth curve of the control options, as shown in Figure 2, and

(3) Calculate the incremental cost effectiveness for each dominant option, which is the difference in total annual costs between that option and the next most stringent option, divided by the difference in emissions reductions between those two options. For example, using Figure 2, you would calculate incremental cost effectiveness for the difference between options B and D, options D and F, options F and G, and options G and H.

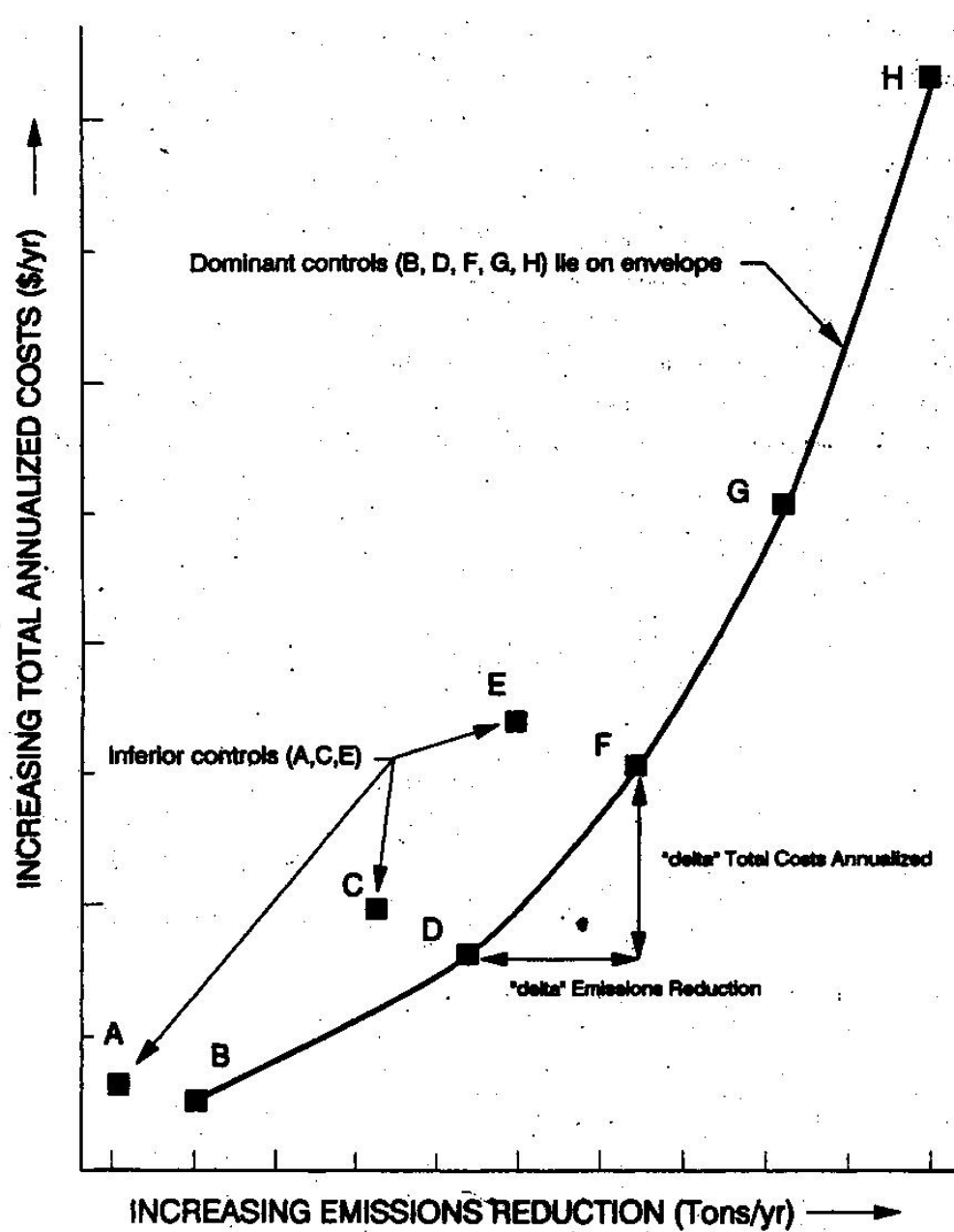


Figure 2. Least-cost Envelope.

A comparison of incremental costs can also be useful in evaluating the viability of a specific control option over a range of efficiencies. For example, depending on the capital and operational cost of a control device, total and incremental cost may vary significantly (either increasing or decreasing) over the operational range of a control device.

In addition, when you evaluate the average or incremental cost effectiveness of a control alternative, you should make reasonable and supportable assumptions regarding control efficiencies. An unrealistically low assessment of the emission reduction potential of a certain technology could result in inflated cost-effectiveness figures.

_____ *What other information should I provide in the cost impacts analysis?*

You should provide documentation of any unusual circumstances that exist for the source that would lead to cost-effectiveness estimates that would exceed that for recent retrofits. This is especially important in cases where recent retrofits have cost-effectiveness values that are within a reasonable range, but your analysis concludes that costs for the source being analyzed are not reasonable.

Example: In an arid region, large amounts of water are needed for a scrubbing system. Acquiring water from a distant location could greatly increase the cost effectiveness of wet scrubbing as a control option.

Impact analysis part 2: How should I analyze and report energy impacts?

You should examine the energy requirements of the control technology and determine whether the use of that technology results in any significant or unusual energy penalties or benefits. A source owner may, for example, benefit from the combustion of a concentrated gas stream rich in volatile organic compounds; on the other hand, more often extra fuel or electricity is required to power a control device or incinerate a dilute gas stream. If such benefits or penalties exist, they should be quantified and included in the cost analysis. Because energy penalties or benefits can usually be quantified in terms of additional cost or income to the source, the energy impacts analysis can, in most cases, simply be factored into the cost impacts analysis. However, certain types of control technologies have inherent energy penalties associated with their use. While you should quantify these

penalties, so long as they are within the normal range for the technology in question, you should not, in general, consider such penalties to be an adequate justification for eliminating that technology from consideration.

Your energy impact analysis should consider only direct energy consumption and not indirect energy impacts. For example, you could estimate the direct energy impacts of the control alternative in units of energy consumption at the source (e.g., BTU, kWh, barrels of oil, tons of coal). The energy requirements of the control options should be shown in terms of total (and in certain cases, also incremental) energy costs per ton of pollutant removed. You can then convert these units into dollar costs and, where appropriate, factor these costs into the control cost analysis.

You generally do not consider indirect energy impacts (such as energy to produce raw materials for construction of control equipment). However, if you determine, either independently or based on a showing by the source owner, that the indirect energy impact is unusual or significant and that the impact can be well quantified, you may consider the indirect impact.

The energy impact analysis may also address

concerns over the use of locally scarce fuels. The designation of a scarce fuel may vary from region to region. However, in general, a scarce fuel is one which is in short supply locally and can be better used for alternative purposes, or one which may not be reasonably available to the source either at the present time or in the near future.

Finally, the energy impacts analysis may consider whether there are relative differences between alternatives regarding the use of locally or regionally available coal, and whether a given alternative would result in significant economic disruption or unemployment. For example, where two options are equally cost effective and achieve equivalent or similar emissions reductions, one option may be preferred if the other alternative results in significant disruption or unemployment.

Impact analysis part 3: How do I analyze "non-air quality environmental impacts?"

In the non-air quality related environmental impacts portion of the BART analysis, you address environmental impacts other than air quality due to emissions of the pollutant in question. Such environmental impacts include solid or hazardous waste

generation and discharges of polluted water from a control device.

You should identify any significant or unusual environmental impacts associated with a control alternative that have the potential to affect the selection or elimination of a control alternative. Some control technologies may have potentially significant secondary environmental impacts. Scrubber effluent, for example, may affect water quality and land use. Alternatively, water availability may affect the feasibility and costs of wet scrubbers. Other examples of secondary environmental impacts could include hazardous waste discharges, such as spent catalysts or contaminated carbon. Generally, these types of environmental concerns become important when sensitive site-specific receptors exist or when the incremental emissions reductions potential of the most stringent control is only marginally greater than the next most-effective option. However, the fact that a control device creates liquid and solid waste that must be disposed of does not necessarily argue against selection of that technology as BART, particularly if the control device has been applied to similar facilities elsewhere and the solid or liquid waste problem under review is similar to those other

applications. On the other hand, where you or the source owner can show that unusual circumstances at the proposed facility create greater problems than experienced elsewhere, this may provide a basis for the elimination of that control alternative as BART.

The procedure for conducting an analysis of non-air quality environmental impacts should be made based on a consideration of site-specific circumstances. It is not necessary to perform this analysis of environmental impacts for the entire list of technologies you ranked in Step 3, if you propose to adopt the most stringent alternative. In that case, the analysis need only address those control alternatives with any significant or unusual environmental impacts that have the potential to affect the selection or elimination of a control alternative. Thus, any important relative environmental impacts (both positive and negative) of alternatives can be compared with each other.

In general, the analysis of impacts starts with the identification and quantification of the solid, liquid, and gaseous discharges from the control device or devices under review. Initially, you should perform a qualitative or semi-quantitative screening to narrow the analysis to discharges with potential for causing

adverse environmental effects. Next, you should assess the mass and composition of any such discharges and quantify them to the extent possible, based on readily-available information. You should also assemble pertinent information about the public or environmental consequences of releasing these materials.

_____ *What are examples of non-air quality environmental impacts?*

The following are examples of how to conduct non-air quality environmental impacts:

- Water Impact

You should identify the relative quantities of water used and water pollutants produced and discharged as a result of the use of each alternative emission control system relative to the most stringent alternative. Where possible, you should assess the effect on ground water and such local surface water quality parameters as pH, turbidity, dissolved oxygen, salinity, toxic chemical levels, temperature, and any other important considerations. The analysis should consider whether applicable water quality standards will be met and the availability and effectiveness of various techniques to reduce

potential adverse effects.

- Solid Waste Disposal Impact

You should compare the quality and quantity of solid waste (e.g., sludges, solids) that must be stored and disposed of or recycled as a result of the application of each alternative emission control system with the quality and quantity of wastes created with the most stringent emission control system. You should consider the composition and various other characteristics of the solid waste (such as permeability, water retention, rewatering of dried material, compression strength, leachability of dissolved ions, bulk density, ability to support vegetation growth and hazardous characteristics) which are significant with regard to potential surface water pollution or transport into and contamination of subsurface waters or aquifers.

- Irreversible or Irretrievable Commitment of Resources

You may consider the extent to which the alternative emission control systems may involve a trade-off between short-term environmental gains at the expense of long-term environmental losses and the extent to which the alternative systems

may result in irreversible or irretrievable commitment of resources (for example, use of scarce water resources).

- Other Adverse Environmental Impacts

You may consider significant differences in noise levels, radiant heat, or dissipated static electrical energy. Other examples of non-air quality environmental impacts would include hazardous waste discharges such as spent catalysts or contaminated carbon. Generally, these types of environmental concerns become important when the plant is located in an area that is sensitive to environmental degradation and when the incremental emissions reductions potential of the most stringent control option is only marginally greater than the next most-effective option.

- Benefits to the Environment

It is important to consider relative differences between options regarding their beneficial impacts to non-air quality-related environmental media. For example, you may consider whether a given control option results in less deposition of pollutants to nearby sensitive water bodies.

Step 5: How do I select the "best" alternative, using the

results of Steps 1 through 4?

Summary of the Impacts Analysis

From the alternatives you ranked in Step 3, you should develop a chart (or charts) displaying for each of the ranked alternatives:

- expected emission rate (tons per year, pounds per hour);
- emissions performance level (e.g., percent pollutant removed, emissions per unit product, lb/MMbtu, ppm);
- expected emissions reductions (tons per year);
- costs of compliance -- total annualized costs (\$), cost effectiveness (\$/ton), and incremental cost effectiveness (\$/ton);
- energy impacts (indicate any significant energy benefits or disadvantages);
- non-air quality environmental impacts (includes any significant or unusual other media impacts, e.g., water or solid waste), both positive and negative.

Selecting a "best" alternative

We are proposing an approach for evaluating control options for BART that begins with consideration

of the most stringent control option. In addition, we are taking comment on an alternative approach that allows you to begin this evaluation with a less stringent control option. These options are described below. Our proposal involves a sequential process for conducting the impacts analysis that begins with a complete evaluation of the most stringent control option. If you determine that the most stringent alternative in the ranking does not impose unreasonable costs of compliance, taking into account both average and incremental costs, then the analysis begins with a presumption that this level is selected. You then proceed to considering whether energy and non-air quality environmental impacts would justify selection of an alternative control option. If there are no outstanding issues regarding energy and non-air quality environmental impacts, the analysis is ended and the most stringent alternative is identified as the "best system of continuous emission reduction."

If you determine that the most stringent alternative is unacceptable due to such impacts, you need to document the rationale for this finding for the public record. Then, the next most-effective alternative in the listing becomes the new control candidate and is similarly evaluated. This process

continues until you identify a technology which does not pose unacceptable costs of compliance, energy and/or non-air quality environmental impacts. We believe this approach provides the advantages of being straightforward to implement and assuring that thorough consideration is given to stringent control alternatives.

The EPA also requests comment on an alternative decision-making approach that would not begin with an evaluation of the most stringent control option. For example, you could choose to begin the BART determination process by evaluating the least stringent, technically feasible control option or by evaluating an intermediate control option drawn from the range of technically feasible control alternatives. Under this approach, you would then consider the additional emissions reductions, costs, and other effects (if any) of successively more stringent control options. Under such an approach, you would still be required to (1) display and rank all of the options in order of control effectiveness and to identify the average and incremental costs of each option; (2) consider the energy and non-air quality environmental impacts of each option; and (3) provide a justification for adopting the technology that you

select as the "best" level of control, including an explanation as to why you rejected other more stringent control technologies.

For utility boiler SO₂ control, EPA presumes that cost-effective control levels of 90-95 percent control are generally achievable.¹⁸ Where there is no existing control technology in place, this level of control is generally achievable at cost-effectiveness values that are in the hundreds of dollars per ton range or less.¹⁹ We believe that the "consideration of cost" factor for source-by-source BART, which is a technology-based approach, generally requires selection of control measures that are within this level of cost effectiveness. We recognize that the population of utility boilers subject to BART may have case-by-case variations (for example, type of fuel used, severe space limitations, and presence of existing control

¹⁸ Documentation of the presumption that 90-95 percent control is achievable is contained in a recent report entitled Controlling SO₂ Emissions: A Review of Technologies, EPA-600/R-00-093, available on the internet at <http://www.epa.gov/ORD/WebPubs/so2>. This report summarizes percentage controls for flue gas desulfurization (FGD) systems worldwide, provides detailed methods for evaluating costs, and explains the reasons why costs have been decreasing with time.

¹⁹ The EPA has used the cost models in the Controlling SO₂ Emissions report to calculate cost-effectiveness (\$/ton) estimates for FGD technologies for a number of example cases. (See note to docket A-2000-28 from Tim Smith, EPA/OAQPS, December 29, 2000).

equipment) that could affect the costs of applying retrofit controls. If you wish to demonstrate a lesser degree of control as BART for a particular utility boiler, you would need to demonstrate the source-specific circumstances with respect to costs, remaining useful life, non-air quality environmental impacts, or energy impacts that would justify less stringent controls than for a typical utility boiler.

For evaluating the significance of the costs of compliance, EPA requests comment on whether the final rule should contain specific criteria, and on whether such criteria would improve implementation of the BART requirement. For example, in the work of the Western Regional Air Partnership (WRAP)²⁰, a system is described which views as "low cost" those controls with an average cost effectiveness below \$500/ton, as "moderate" those controls with an average cost effectiveness between \$500 to 3000 per ton, and as "high" those controls with an average cost effectiveness greater than \$3000 per ton.

In selecting a "best" alternative, should I consider

²⁰ Technical Support Documentation. Voluntary Emissions Reduction Program for Major Industrial Sources of Sulfur Dioxide in Nine Western States and a Backstop Market Trading Program. An Annex to the Report of the Grand Canyon Visibility Transport Commission. Section 6A.

the affordability of controls?

Even if the control technology is cost effective, there may be cases where the installation of controls would affect the viability of continued plant operations.

As a general matter, for plants that are essentially uncontrolled at present, and emit at much greater levels per unit of production than other plants in the category, we are unlikely to accept as BART any analysis that preserves a source's uncontrolled status. While this result may predict the shutdown of some facilities, we believe that the flexibility provided in the regional haze rule for an alternative reduction approach, such as an emissions trading program, will minimize the likelihood of shutdowns.

Nonetheless, we recognize there may be unusual circumstances that justify taking into consideration the conditions of the plant and the economic effects of requiring the use of a given control technology. These effects would include effects on product prices, the market share, and profitability of the source. We do not intend, for example, that the most stringent alternative must always be selected, if that level would cause a plant to shut down, while a slightly

lesser degree of control would not have this effect. Where there are such unusual circumstances that are judged to have a severe effect on plant operations, you may take into consideration the conditions of the plant and the economic effects of requiring the use of a control technology. Where these effects are judged to have a severe impact on plant operations you may consider them in the selection process, so long as you provide an economic analysis that demonstrates, in sufficient detail for a meaningful public review, the specific economic effects, parameters, and reasoning. (We recognize that this review process must preserve the confidentiality of sensitive business information). Any analysis should consider whether other competing plants in the same industry may also be required to install BART controls.

V. CUMULATIVE AIR QUALITY ANALYSIS

What air quality analysis do we require in the regional haze rule for purposes of BART determinations?

In the regional haze rule, we require the following in 40 CFR 51.308(e)(1)(ii)(B):

An analysis of the degree of visibility improvement that would be achieved in each mandatory Class I Federal area as a result of the emission reductions from all sources subject to BART located within the region that contributes to visibility impairment in the Class I area, based

on the [results of the engineering analysis required by 40 CFR 51.308(e) (1) (ii) (A)] ...

This means that the regional haze rule requires you to conduct a regional modeling analysis which addresses the total cumulative regional visibility improvement if all sources subject to BART were to install the "best" controls selected according to the engineering analysis described above in section IV of these guidelines. We are developing guidelines for regional air quality modeling.²¹

How do I consider the results of this analysis in my selection of BART for individual sources?

You use a regional modeling analysis to assess the cumulative impact on visibility of the controls selected in the engineering analysis for the time period for the first regional haze SIP, that is, the time period between the baseline period and the year 2018. You use this cumulative impact assessment to make a determination of whether the controls you identified, in their entirety, provide a sufficient visibility improvement to justify their installation. We believe that there is a sufficient basis for the controls if you can demonstrate for any Class I area that any of the following criteria are met:

²¹ [The current draft of this document is entitled Guidance for Attainment of Air Quality Goals for PM_{2.5} and Regional Haze. We expect this document will be released in final form before the publication of the final rule for the BART guidelines]

(1) the cumulative visibility improvement is a substantial fraction of the achievable visibility improvement from all measures included in the SIP, or is a substantial fraction of the visibility goal selected for any Class I area (EPA believes that for such situations, the controls would be essential to ensure progress towards a long-term improvement in visibility); OR

(2) the cumulative visibility improvement is necessary to prevent any degradation from current conditions on the best visibility days.

Note that under 40 CFR 51.308(e)(1)(ii)(B), the passage cited above, the rule does not provide for modeling of subgroupings of the BART population within a region, nor for determinations that some, but not all, of the controls selected in the engineering analysis may be included in the SIP. Thus, to comply with 40 CFR 51.308(e)(1), the visibility SIP must provide for BART emission limitations for all sources subject to BART (or demonstrate that BART-level controls are already in place and required by the SIP), unless you provide a demonstration that no BART controls are justifiable based upon the cumulative visibility analysis.

VI. ENFORCEABLE LIMITS/COMPLIANCE DATE

To complete the BART process, you must establish enforceable emission limits and require compliance within a given period of time. In particular, you must establish an enforceable emission limit for each subject emission unit at the source and for each pollutant subject to review that is emitted from the source. In addition, you must require compliance with the BART emission limitations no later than 5 years after EPA approves your SIP. If technological or economic limitations in the application of a measurement methodology to a particular emission unit would make an emissions limit infeasible, you may prescribe a design, equipment, work practice, operation standard, or combination of these types of standards. You should ensure that any BART requirements are written in a way that clearly specifies the individual emission unit(s) subject to BART review. Because the BART requirements are "applicable" requirements of the CAA, they must be included as title V permit conditions according to the procedures established in 40 CFR part 70 or 40 CFR part 71.

Section 302(k) of the CAA requires emissions limits such as BART to be met on a continuous basis. Although this provision does not necessarily require the use of continuous emissions monitoring (CEMs), it is important that sources

employ techniques that ensure compliance on a continuous basis. Monitoring requirements generally applicable to sources, including those that are subject to BART, are governed by other regulations. See, e.g., 40 CFR part 64 (compliance assurance monitoring); 40 CFR 70.6(a)(3) (periodic monitoring); 40 CFR 70.6(c)(1) (sufficiency monitoring). Note also that while we do not believe that CEMs would necessarily be required for all BART sources, the vast majority of electric generating units already employ CEM technology for other programs, such as the acid rain program. In addition, emissions limits must be enforceable as a practical matter (contain appropriate averaging times, compliance verification procedures and recordkeeping requirements). In light of the above, the permit must:

- be sufficient to show compliance or noncompliance (i.e., through monitoring times of operation, fuel input, or other indices of operating conditions and practices); and
- specify a reasonable averaging time consistent with established reference methods, contain reference methods for determining compliance, and provide for adequate reporting and recordkeeping so that air quality agency personnel can determine the compliance status of the source.

VII. EMISSION TRADING PROGRAM OVERVIEW

40 CFR 51.308(e) (2) allows States the option of implementing an emissions trading program or other alternative measure instead of requiring BART. This option provides the opportunity for achieving better environmental results at a lower cost than under a source-by-source BART requirement. A trading program must include participation by BART sources, but may also include sources that are not subject to BART. The program would allow for implementation during the first implementation period of the regional haze rule (that is, by the year 2018) instead of the 5-year compliance period noted above. In this section of the guidance, we provide an overview of the steps in developing a trading program²² consistent with 40 CFR 51.308(e) (2).

What are the general steps in developing an emission trading program?

The basic steps are to:

- (1) Develop emission budgets;
- (2) Allocate emission allowances to individual sources; and
- (3) Develop a system for tracking individual source emissions and allowances. (For example, procedures for transactions, monitoring,

²² We focus in this section on emission cap and trade programs which we believe will be the most common type of economic incentive program developed as an alternative to BART.

compliance and other means of ensuring program accountability).

What are emission budgets and allowances?

An emissions budget is a limit, for a given source population, on the total emissions amount²³ that may be emitted by those sources over a State or region. An emission budget is also referred to as an "emission cap."

In general, the emission budget is subdivided into source-specific amounts that we refer to as "allowances." Generally, each allowance equals one ton of emissions. Sources must hold allowances for all emissions of the pollutant covered by the program that they emit. Once you allocate the allowances, source owners have flexibility in determining how they will meet their emissions limit.

Source owners have the options of:

- emitting at the level of allowances they are allocated (for example, by controlling emissions or curtailing operations),
- emitting at amounts less than the allowance level, thus freeing up allowances that may be used by other sources owned by the same owner, or sold to another

²³ An emission budget generally represents a total emission amount for a single pollutant such as SO₂. As noted in the preamble to the regional haze rule (64 FR 35743, July 1, 1999) we believe that unresolved technical difficulties preclude inter-pollutant trading at this time.

source owner, or

-- emitting at amounts greater than the allowance level, and purchasing allowances from other sources or using excess allowances from another plant under the same ownership.

A good example of an emissions trading program is the acid rain program under title IV of the CAA. The acid rain program is a national program -- it establishes a national emissions cap, allocates allowances to individual sources, and allows trading of allowances between all covered sources in the United States. The Ozone Transport Commission's NO_x Memorandum of Understanding, and the NO_x SIP call both provide for regional trading programs. Other trading programs generally have applied only to sources within a single State. A regional multi-State program provides greater opportunities for emission trading, and should be considered by regional planning organizations that are evaluating alternatives to source-specific BART. The WRAP has recommended a regional market trading program as a backstop to its overall emission reduction program for SO₂. Although regional trading programs require more interstate coordination, EPA has expertise that it can offer to States wishing to pursue such a program.

What criteria must be met in developing an emission trading

program as an alternative to BART?

Under the regional haze rule, an emission trading program must achieve "greater reasonable progress" (that is, greater visibility improvement) than would be achieved through the installation and operation of source-specific BART. The "greater reasonable progress" demonstration involves the following steps, which are discussed in more detail below:

- identify the sources that are subject to BART,
- calculate the emissions reductions that would be achieved if BART were installed and operated on sources subject to BART,
- demonstrate whether your emission budget achieves emission levels that are equivalent to or less than the emissions levels that would result if BART were installed and operated,
- analyze whether implementing a trading program in lieu of BART would likely lead to differences in the geographic distribution of emissions within a region, and
- demonstrate that the emission levels will achieve greater progress in visibility than would be achieved if BART were installed and operated on sources subject to BART.

How do I identify sources subject to BART?

For a trading program, you would identify sources subject to BART in the same way as we described in sections II and III of these guidelines.

How do I calculate the emissions reductions that would be achieved if BART were installed and operated on these sources?

For a trading program under 51.308(e)(2), you may identify these emission reductions by:

- conducting a case-by-case analysis for each of the sources, using the procedures described above in these guidelines in sections II through V;
- conducting an analysis for each source category that takes into account the available technologies, the costs of compliance, the energy impacts, the non-air quality environmental impacts, the pollution control equipment in use, and the remaining useful life, on a category-wide basis; or
- conducting an analysis that combines considerations on both source-specific and category-wide information.

For a category-wide analysis of available control options, you develop cost estimates and estimates of

energy and non-air quality environmental impacts that you judge representative of the sources subject to BART for a source category as a whole, rather than analyze each source that is subject to BART. The basic steps of a category-wide analysis are the same as for a source-specific analysis. You identify technically feasible control options and rank them according to control stringency. Next, you calculate the costs and cost effectiveness for each control option, beginning with the most stringent option. Likely, the category-wide estimate will represent a range of cost and cost-effectiveness values rather than a single number.²⁴ Next, you evaluate the expected energy and non-air quality impacts (both positive and negative impacts) to determine whether these impacts preclude selection of a given alternative. If the most stringent option is deemed unacceptable, you proceed to evaluate the next most stringent option and repeat the process until an option is selected.

The EPA requests comment on an approach to the category-wide analysis of BART that would allow the States to evaluate different levels of BART control

²⁴ We request comment on whether these guidelines should recommend a weighted average of the values instead of presenting the values as a range.

options (e.g., all measures less than \$2000/ton vs. all measures less than \$3000/ton) through an iterative process of assessing relative changes in cumulative visibility impairment. For example, States or regional planning organizations could use \$2000/ton as an initial cutoff for selecting reasonable control options. The States or regional planning organizations could then compare the across-the-board regional emissions and visibility changes resulting from the implementation of the initial control option and that resulting from the implementation of control options with a \$3000/ton cutoff (or \$1500/ton, etc). This approach would allow States and other stakeholders to understand the visibility differences among BART control options achieving less cost-effective or more cost-effective levels of overall control.

For a cap and trade program, how do I demonstrate that my emission budget results in emission levels that are equivalent to or less than the emissions levels that would result if BART were installed and operated?

Emissions budgets must address two criteria. First, you must develop an emissions budget for a

future year²⁵ which ensures reductions in actual emissions that achieve greater reasonable visibility progress than BART. This will generally necessitate development of a "baseline forecast" of emissions for the population of sources included within the budget. A baseline forecast is a prediction of the future emissions for that source population in absence of either BART or the alternative trading program. Second, you must take into consideration the timing of the emission budget relative to the timetable for BART. If the implementation timetable for the emission trading program is a significantly longer period than the 5-year time period for BART implementation, you should establish budgets for interim years that ensure steady and continuing progress in emissions reductions.

In evaluating whether the program milestone for the year 2018 provides for a BART-equivalent or better emission inventory total, you conduct the following steps:

- Identify the source population included within the budget, which must include all BART sources and may include other sources,

²⁵ As required by 40 CFR 51.308(e)(2)(iii), emissions reductions must take place during the period of the first long-term strategy for regional haze. This means the reductions must take place no later than the year 2018.

- For sources included within the budget, develop a base year²⁶ emissions inventory for stationary sources included within the budget, using the most current available emission inventory,
- Develop a future emissions inventory for the milestone year (in most cases, the year 2018), that is, an inventory of projected emissions for the milestone year in the absence of BART or a trading program,
- Calculate the reductions from the forecasted emissions if BART were installed on all sources subject to BART,
- Subtract this amount from the forecasted total, and
- Compare the budget you have selected and confirm that it does not exceed this level of emissions.

Example:

_____ For a given region for which a budget is being developed for SO₂, the most recent inventory is for the year 2002. The budget you propose for the

²⁶ The base year must reflect the year of the most current available emission inventory, in many cases the year 2002, and this base year should not be later than the 2000-2004 time period used for baseline purposes under the regional haze rule.

trading program is 1.2 million tons. The projected emissions inventory total for the year 2018, using the year 2002 inventory and growth projections, is 4 million tons per year.

Application of BART controls on the population of sources subject to BART would achieve 2.5 million tons per year of reductions. Subtracting this amount from the project inventory yields a value of 1.5 million tons. Because your selected budget of 1.2 million tons is less than this value, it achieves a better than a BART-equivalent emission total.

How do I ensure that trading budgets achieve "greater reasonable progress?"

In some cases, you may be able to demonstrate that a trading program that achieves greater emissions progress may also achieve greater visibility progress without necessarily conducting a detailed dispersion modeling analysis. This could be done, for example, if you can demonstrate, using economic models, that the likely distribution of emissions when the trading program is implemented would not be significantly different than the distribution of emissions if BART was in place. If distribution of emissions is not

substantially different than under BART, and greater emissions reductions are achieved, then the trading program would presumptively achieve "greater reasonable progress."

If the distribution of emissions is different under the two approaches, then the possibility exists that the trading program, even though it achieves greater emissions reductions, may not achieve better visibility improvement. Where this is the case, then you must conduct dispersion modeling to determine the visibility impact of the trading alternative. The dispersion modeling should determine differences in visibility between BART and the trading program for each impacted Class I area, for the worst and best 20 percent of days. The modeling should identify:

- the estimated difference in visibility conditions under the two approaches for each Class I area,

- the average difference in visibility over all Class I areas impacted by the region's emissions.

[For example, if six Class I areas are in the region impacted, you would take the average of the improvement in deciviews over those six areas].

The modeling study would demonstrate "greater reasonable progress" if both of the following two

criteria are met:

-- visibility does not decline in any Class I area

Example: In Class I area X, BART would result in 2.5 deciviews of improvement but the trading program would achieve 1.4 deciviews. The criterion would be met because the trading program results in improvement of 1.4 deciviews, rather than a decline in visibility.

-- overall improvement in visibility, determined by comparing the average differences over all affected Class I areas

Example: For the same scenario, assume that ten Class I areas are impacted. The average deciview improvement from BART for the ten Class I areas is 3.5 deciviews (the 2.5 deciview value noted above, and values for the remaining areas of 3.9, 4.1, 1.7, 3.3, 4.5, 3.1, 3.6, 3.8 and 4.5). The average of the ten deciview values for the trading program must be 3.5 deciviews or more.

How do I allocate emissions to sources?

Emission allocations must be consistent with the overall budget that you provide to us. We believe it is not

appropriate for EPA to require a particular process and criteria for individual source allocations, and thus we will not dictate how to allocate allowances. We will provide information on allocation processes to State and local agencies, and to regional planning organizations.

What provisions must I include in developing a system for tracking individual source emissions and allowances?

The EPA requests comment generally on what the BART guidelines should require in terms of the level of detail for the administration of a trading program and for the tracking of emissions and allowances. In general, we expect regional haze trading programs to contain the same degree of rigor as trading programs for criteria pollutants. In terms of ensuring the overall integrity and enforceability of a trading program, we expect that you will generally follow the guidance already being developed for other economic incentive programs (EIPs) in establishing a trading program for regional haze. In addition, we expect that any future trading programs developed by States and/or regional planning organizations will be developed in consultation with a broad range of stakeholders.

There are two EPA-administered emission trading programs that we believe provide good examples of the features of a well-run trading program. These two programs provide considerable information that would be useful to the

development of regional haze trading programs as an alternative to BART.

The first example is EPA's acid rain program under title IV of the CAA. Phase I of the acid rain reduction program began in 1995. Under phase I, reductions in the overall SO₂ emissions were required from large coal-burning boilers in 110 power plants in 21 midwest, Appalachian, southeastern and northeastern States. Phase II of the acid rain program began in 2000, and required further reductions in the SO₂ emissions from coal-burning power plants. Phase II also extended the program to cover other lesser-emitting sources. Allowance trading is the centerpiece of EPA's acid rain program for SO₂. You will find information on this program in:

- Title IV of the CAA Amendments (1990),
- 40 CFR part 73 at 58 FR 3687 (January 1993),
- EPA's acid rain website, at www.epa.gov/acidrain/trading.html.

The second example is the rule for reducing regional transport of ground-level ozone (NO_x SIP call). The NO_x SIP call rule requires a number of eastern, midwestern, and southeastern States and the District of Columbia to submit SIPs that address the regional transport of ground-level ozone through reductions in NO_x. States may meet the requirements of the rule by participating in an EPA-administered trading program. To participate in the

program, the States must submit rules sufficiently similar to a model trading rule promulgated by the Agency (40 CFR part 96). More information on this program is available in:

- the preamble and rule in the Federal Register at 63 FR 57356 (October 1998),
- the NO_x compliance guide, available at www.epa.gov/acidrain/modlrule/main.html#126,
- fact sheets for the rule, available at www.epa.gov/ttn/rto/sip/related.html#prop,
- additional information available on EPA's web site, at www.epa.gov/acidrain/modlrule/main.html.

A third program that provides a good example of trading programs is the the Ozone Transport Commission (OTC) NO_x budget program. The OTC NO_x budget program was created to reduce summertime NO_x emissions in the northeast United States. The program caps NO_x emissions for the affected States at less than half of the 1990 baseline emission level of 490,000 tons, and uses trading to achieve cost-effective compliance. For more information on the trading provisions of the program, see:

- Memorandum of Understanding (MOU), available at www.sso.org/otc/att2.HTM,
- Fact sheets available at www.sso.org/otc/Publications/327facts.htm,
- Additional information, available at www.epa.gov/acidrain/otc/otcmain.html.

The EPA is including in the docket for this rulemaking a detailed presentation that has been used by EPA's Clean Air Markets Division to explain the provisions of NO_x trading programs with State and local officials. This presentation provides considerable information on EPA's views on sound trading programs.

The EPA recognizes that it is desirable to minimize administrative burdens for sources that may be subject to the provisions of several different emission trading programs. We believe that it is desirable for any emission trading program for BART to use existing tracking systems to the extent possible. At the same time, we request comment on whether States and/or regional planning organizations should conduct additional technical analyses (and, if so, to what extent) to determine whether the time periods for tracking of allowances under existing programs (i.e., annual allowances for SO₂ for the acid rain program, and allowances for the ozone season for NO_x) are appropriate for purposes of demonstrating greater reasonable regional progress vis a vis BART. The EPA expects that if such analyses are conducted, they would be conducted in conjunction with the timelines for development of SIPs for regional haze.

How would a regional haze trading program interface with the requirements for "reasonably attributable" BART under 40 CFR 51.302 of the regional haze rule?

If a State elects to impose case-by-case BART emission limitations according to 40 CFR 51.308(e)(1) of the regional haze rule, then there should be no difficulties arising from the implementation of requirement for "reasonably attributable" BART under 40 CFR 51.302. However, if a State chooses an alternative measure, such as an emissions trading program, in lieu of requiring BART emissions limitation on specific sources, then the requirement for BART is not satisfied until alternative measures reduce emissions sufficient to make "more reasonable progress than BART." Thus, in that period between implementation of an emissions trading program and the satisfaction of the overall BART requirement, an individual source could be required to install BART for reasonably attributable impairment under 40 CFR 51.302. Because such an overlay of the requirements under 40 CFR 51.302 on a trading program under 40 CFR 51.308 might affect the economic and other considerations that were used in developing the emissions trading program, the regional haze rule allows for a "geographic enhancement" under 40 CFR 51.308. This provision addresses the interface between a regional trading program and the requirement under 40 CFR 51.302 regarding BART for reasonably attributable visibility impairment. (See 40 CFR 51.308(e)(2)(v)).

The EPA recognizes the desirability of addressing any such issues at the outset of developing an emissions trading

program to address regional haze. We note that the WRAP, the planning organization for the nine western States considering a trading program under 40 CFR 51.309 (which contains a similar geographic enhancement provision), has adopted policies which target use of the 51.302 provisions by the Federal Land Managers (FLMs). In this case for the nine WRAP States, the FLMs have agreed that they will certify reasonable attributable impairment only under certain specific conditions. Under this approach, the FLMs would certify under 40 CFR 51.302 only if the regional trading program is not decreasing sulfate concentrations in a Class I area within the region. Moreover, the FLMs will certify impairment under 40 CFR 51.302 only where: (1) BART-eligible sources are located "near" that class I area and (2) those sources have not implemented BART controls. In addition, the WRAP is investigating other procedures for States to follow in responding to a certification of "reasonably attributable" impairment if an emissions trading approach is adopted to address the BART requirement based on the sources' impact on regional haze.

The specific pollutants and the magnitude of impacts under the regional haze rule and at specific Class I areas may vary in different regions of the country. We expect that each State through its associated regional planning organization will evaluate the need for geographic

enhancement procedures within any adopted regional emissions trading program.